



mindgardens
Neuroscience Network

Keeping the Body in Mind

The evolution of a lifestyle program
for mental health consumers

2004 - 2024
FROM VISION TO ROUTINE CARE



UNSW
SYDNEY



Health
South Eastern Sydney
Local Health District

Acknowledgements

Funding

Sources of funding for each component of the Keeping the Body in Mind (KBIM) Program are discussed within the manuscript. Preparation of this manuscript was supported by grant funding from the Mindgardens Neuroscience Network and the Australian Government Department of Health and Aged Care.

Declaration of Conflicting Interests

All authors are associated with the Keeping the Body in Mind Program and/or Mindgardens Neuroscience Network. Authors do not stand to benefit financially through the publication or dissemination of this report.

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Identification

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This document is available on the Mindgardens Neuroscience Network website: www.mindgardens.org.au.

This document may be cited as: Mindgardens Neuroscience Network (2024). Keeping the Body in Mind. The Evolution of a Lifestyle Program for Mental Health Consumers 2004 - 2024: From Vision to Routine Care

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Foreword



It is my pleasure to offer some introductory comments on the KBIM Story, and to commend it to anyone interested in how this success story evolved. Important lessons on how to go about service improvement are there for all to consider.

It is easy looking back to imagine that the vision and the plan were all in place at the start, but nothing could be further from the truth. The story is worth telling because it begins in a suburban community mental health clinic where clinicians partnered with consumers and began a long and ultimately successful journey by refusing to accept that the problems consumers were encountering were unavoidable.

What followed was a determined and systematic effort to understand the problem, consider solutions, and to develop tools and strategies so that all clinicians could more easily understand what to look for by screening, and how to intervene.

It took passion, persistence, and patience to sustain and develop this service to where it is now. As well as a core group of key clinicians and researchers, there have been many others along the way who have offered support and encouragement to a service that did not always enjoy secure funding, and fostered a widespread understanding of its value and importance.

I write as the NSW Chief Psychiatrist, but my first encounter with KBIM was as the chair of what is now the NSW Institute of Management Education and Training (IMET), where we approved funding to support the development of what became the Positive Cardiometabolic Algorithm. We thought at the time that it might help NSW psychiatry registrars deliver reliable metabolic screening and treatment, and had no expectation that this would become an internationally recognised tool!

My next encounter was when I became the Director of Mental Health in South Eastern Sydney Local Health District, which included the Bondi Junction Community Mental Health Team, working closely with the late David Pearce. David brought to my attention that KBIM was in danger of losing its funding and told me he thought the program had real potential. Together we agreed to find a way to continue funding KBIM for at least another 12 months. Little did either of us appreciate how important that decision was to be.

These are two of the doubtless many episodes in the history of KBIM which could have stalled this essential and gold standard program, were it not for the energy, passion, and commitment of the team. They did not start out with a desire to become internationally recognised and sought after, but rather to work with consumers and their families to help them in recovery and to minimise the devastating cardiometabolic consequences of their treatment. Along the way they got some lucky breaks, suffered many disappointments, and were assisted by the occasional support of colleagues like David Pearce who understood and supported their vision.

This is not just about KBIM; it is a tale that illustrates what can be done with determination, passion, patience, and optimism, and in collaboration with consumers, carers, clinical colleagues, policy makers and funders. It is intended to celebrate success, and to inspire others to continue looking for ways to overcome the barriers to improving health outcomes for mental health consumers.

**Dr Murray Wright
NSW Chief Psychiatrist**

Introduction



The Keeping the Body in Mind (KBIM) Program is recognised internationally as the gold standard for integrating physical health care with mental health treatment and support. Just about every week, the KBIM team receives a request from a mental service somewhere in the world for advice or support in implementing a physical health program. Their circumstances are diverse but with many common themes; they are seeking practical information about how to get started, or overcome roadblocks along the way.

The KBIM Story has been developed to provide some of the answers. It presents our progress chronologically, highlighting the key issues at each stage in our development from the germ of an idea to a fully-fledged movement. It includes candid comments and learnings that we hope will set other teams up for success – perhaps without having to learn the hard way like we did. We hope it will serve as a practical guide as well as a history.

For those who have worked in KBIM from the beginning, this history holds considerable nostalgia. It reminds us how we scraped together the first services through goodwill, enthusiastic volunteers and petty cash. It takes us back to the first iterations of what would become the Positive Cardiometabolic Algorithm and go on to have an international impact. And it recalls our wonderful colleagues, some sadly no longer with us, who gave us early backing.

There is another powerful thread running through the story. The commitment of consumers to the hard work of regaining and maintaining their health is the real narrative of KBIM. Everything we did in the program responded directly to consumers' lived experience and the priorities they voiced; in turn, the consumers' trust in the team and willingness to push outside their comfort zones allowed us to document and expand on those early successes.

KBIM has gone from strength to strength. Its key premise – that people who experience mental health issues have a right to good physical health – has moved into the mainstream, and the program has become a model for others throughout the world. The core elements are extending into new populations, including people from refugee and asylum seeker backgrounds; new physical health domains, including vaccination; and new mechanisms for delivery, including through primary care.

Thanks and congratulations to everyone who has been a part of the KBIM revolution. Its success demonstrates what is possible when we let lived experience take the lead, and it is a testament to your vision and your values.

This publication is an opportunity to celebrate our successes, share the challenges we encountered along the way, and detail the solutions we developed. I hope our work inspires others to take a parallel journey.

Professor Jackie Curtis

BACKGROUND

People living with serious mental illness continue to die 12 to 15 years earlier than the general population(1). This scandalous situation is largely a result of preventable cardiometabolic disease, stemming from medication side-effects (2), unhealthy diet(3), sedentary lifestyle (4), high use of tobacco and other substances (5), and possibly direct effects of the mental illness itself (6). Physical health issues often begin in the early stages of mental illness and may progress rapidly when people start taking antipsychotic medication (2).Weight gain occurs most rapidly after starting medication but can continue for 10 to 20 years or longer (7), and during this time, some people receive no treatment for physical health issues.

At the turn of the century, health experts knew that people living with serious mental illness often developed high rates of obesity and cardiometabolic complications, such as elevated blood glucose. However the full health impacts of antipsychotic medications have only come to light more recently. As second-generation antipsychotics have become more widely available, their impact on weight gain and risk of conditions such as type 2 diabetes has become clearer, with side-effects sometimes occurring early in the course of treatment (2).

Over decades, mental health specialists and advocates – led by the KBIM team and our international colleagues – have repeatedly highlighted the need to address the huge health gap between people who are living with serious mental illness and those who are not (8, 9). This culminated in the 2019 publication of the Lancet Psychiatry Commission, *A blueprint for protecting the physical health of people with mental illness* (10). Some of the recommendations included:

- metabolic monitoring, to check for changes such as weight gain and unhealthy blood glucose levels.
- best-practice psychotropic medication prescribing.
- prescribing medications with lower potential for adverse metabolic effects.
- taking a more preventative approach, such as stepping in early when there are clinical signs of significant weight gain and prescribing lifestyle changes and medications such as metformin (used to treat pre-diabetes and diabetes).

Lifestyle interventions have demonstrated mixed results when delivered to people living with serious mental illness, though the overall findings are favourable (11). The way in which lifestyle interventions are delivered can support and increase the likelihood of a program’s success. The Lancet Psychiatry Commission describes an optimal lifestyle program as one which:

1. includes both dietary and exercise modification;
2. uses behaviour change techniques, including specific and measurable goals and self-monitoring;
3. is delivered by staff with professional qualifications in exercise or nutrition and dietetics;
4. offers two or more supervised exercise sessions per week;
5. has mental health staff who are familiar with the intervention; and
6. uses peer support from people with lived experience (10).

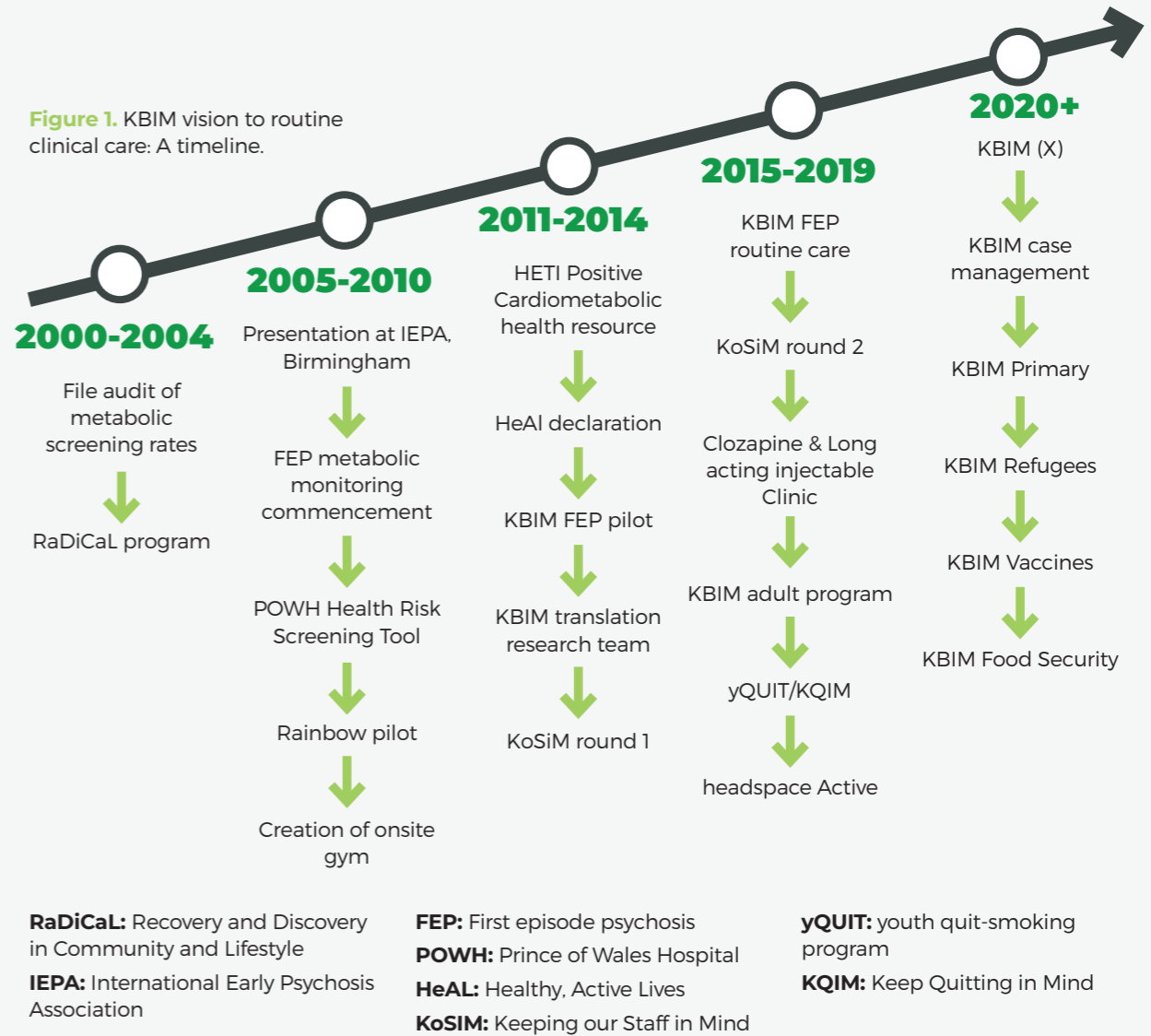
The Keeping the Body in Mind Program includes all of these components and epitomises an evidence-based approach. Its two-decade history as it moved from vision to routine clinical care can serve as an implementation template for other services.

“When we started going through what really worried young people, weight gain was Number 1. It became obvious that there wasn’t much doing fancy CBT to address mental health symptoms when they were so distressed with the amount of weight they were putting on.”

Mental health clinician

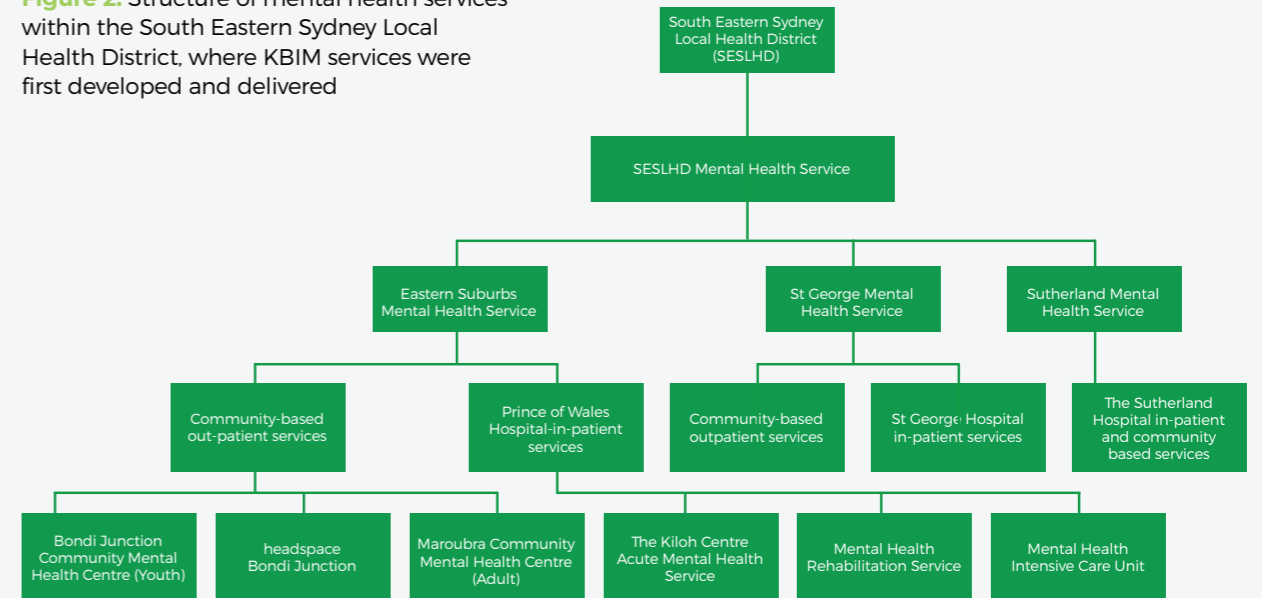
Note: Many of the clinicians and researchers involved in KBIM have had long and eminent careers. Where they are mentioned by name in the text, their title and honorific generally appear as they were at that time. These may have changed subsequently. Some institutions have also changed names. Further information about these can be found in the Glossary.

KBIM vision to routine clinical care: A timeline



South Eastern Sydney Local Health District – the KBIM Context

Figure 2. Structure of mental health services within the South Eastern Sydney Local Health District, where KBIM services were first developed and delivered



Getting started (2000 to 2008): early responses to a worrying trend

In the early 2000s, clinicians within the South Eastern Sydney Local Health District Early Psychosis Programme, based at Bondi Junction Community Health Centre, noticed an unusual pattern of rapid weight gain in their clients.

Abdominal obesity, and elevated cholesterol and glucose levels, are risks for long-term chronic diseases such as heart disease and diabetes as well as early death. The clinicians knew they needed to act, but there was no roadmap for physical health in a mental health service. So they started work on their own.

Development of a Metabolic Monitoring Screening Tool

2006-2008

Alarmed at consumers' rapid and obvious weight gain, clinicians within the Bondi Early Psychosis Program started to conduct metabolic monitoring to check health indicators including height, weight, BMI and waist circumference.

At this time there was no recording form for metabolic screening, so in 2006 the clinicians developed one: the *Metabolic Monitoring Tool* (Figure 2). It subsequently became mandatory for clinicians to initiate metabolic monitoring for all consumers engaged with POWH Mental Health services. Subsequent annual reviews of metabolic screening rates indicated significant increases in this for the Bondi Early Psychosis Program Youth following an initial retrospective audit of clients files from 2006 to 2008.

The *Metabolic Monitoring Tool* was eventually adopted and adapted first by the local health district and subsequently by NSW Health, and implemented throughout NSW Mental Health Services, with a later electronic medical record version.

“I did a literature review for our team’s journal club in 2002. I found four papers, none of them about young people. I then developed a rudimentary metabolic monitoring chart. Our clinicians hand-wrote on the form and took photocopies. That is how we started screening.”

Professor Jackie Curtis

Sport & Cooking Groups: the RaDiCaL Program

2004 – 2008

In 2004, clinicians within the Bondi Early Psychosis Programme commenced the Recovery and Discovery in Community and Lifestyle (RaDiCaL) program. The RaDiCaL program included a sports group, cooking group and healthy lifestyle discussion group, which each ran for one-hour, weekly.

The sports group took place off-site at a local park with fitness equipment that clinicians brought from home. The one-hour cooking group was conducted onsite, in the community mental health centre kitchen. Participants would walk to the shop to collect ingredients, then cook and eat the food together within the mental health centre, enjoying connection and a sense of community at the end of their cooking session. The healthy lifestyle discussion group convened in a meeting room.

All RaDiCaL components were approved by the Eastern Suburbs Mental Health Service (part of the South Eastern Sydney Local Health District) and led by its clinicians. There was no specific funding allocated to the RaDiCaL program, but clinicians could claim the costs of the cooking group ingredients via petty cash.

Figure 2. The Metabolic Monitoring Screening Tool

SEI110.710

S0382 240311 BINDING MARGIN - NO WRITING

| SOUTH EASTERN SYDNEY ILLAWARRA NSW HEALTH Facility: | | FAMILY NAME | | MRN | | | | | | | | | | | | |
|--|------------------------------|-----------------------|-------------------------|---|--------------|--|-------------------------|------------------------------|---------------------------|-----|-----|----|--------------------|--------------------------|---------------|----------------|
| | | GIVEN NAMES | | <input type="checkbox"/> MALE <input type="checkbox"/> FEMALE | | | | | | | | | | | | |
| | | D.O.B. ____/____/____ | | M.O. | | | | | | | | | | | | |
| | | ADDRESS | | | | | | | | | | | | | | |
| | | LOCATION / WARD | | | | | | | | | | | | | | |
| COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE | | | | | | | | | | | | | | | | |
| Height (m) | Country of birth / Ethnicity | Aboriginal / TSI | Personal Hx of Diabetes | FHx Obesity | FHx Diabetes | FHx Cardiovascular Disease | Hx Gestational Diabetes | Hx Polycystic Ovary Syndrome | | | | | | | | |
| | | Y / N | Y / N / Ukn | Y / N / Ukn | Y / N / Ukn | Y / N / Ukn | Y / N / Ukn / NA | Y / N / Ukn / NA | | | | | | | | |
| (Family Hx includes 1st and 2nd degree relatives) | | | | | | [NB: Indicate abnormal blood results with a *] | | | | | | | | | | |
| DATE | WEIGHT (Kg) | CIGS (per day) | EXERCISE (mins per wk) | BMI (Kg/M ²) | WAIST (cm) | BP | LFT's (Norm / Abnorm) | BSL (Random / Fasting) | LIPIDS - Random / Fasting | | | | metabolic syndrome | MEDICATIONS & DAILY DOSE | INTER-VENTION | BLOODS ORDERED |
| | | | | | | | | | Tot Chol | HDL | LDL | TG | | | Y / N | Y / N |
| | | | | | | | | | | | | | | | Y / N | Y / N |
| | | | | | | | | | | | | | | | Y / N | Y / N |
| | | | | | | | | | | | | | | | Y / N | Y / N |
| | | | | | | | | | | | | | | | Y / N | Y / N |
| | | | | | | | | | | | | | | | Y / N | Y / N |

SEI110.710 METABOLIC MONITORING

“When we commenced the ‘in the kitchen’ cooking group, young people came into the centre and discussed what they would like to cook for that lunch time, and we would create a shopping list for that meal. The young people were then given some cash to walk down to the shopping centre, collect the ingredients and come back and we would cook together. This went very well for the first couple of months, but then the young people started to take a long time to return to the centre. Thoughts started forming in my mind about why it was taking so long, I started wondering why they were taking so long and worrying about them walking past a pub on the way there.

I thought ‘Have they put that money through the pokies?’ or ‘are they drinking at the pub?’. However, they always returned with the ingredients and the receipt. After this happened for several weeks, curiosity got the better of me and I had to ask why they were taking so long. They replied, ‘we were having a disagreement in the supermarket’. I felt immediately concerned and asked ‘what were you disagreeing about?’. ‘Well, we were reading the nutrition labels on the back of the food and disagreeing about which was the healthiest option’. The response I got shamed me from what I thought could have been happening at the pub, given they had been taking in all the nutritional information they had learned over the preceding months and were applying it to the shopping task!”

Dr Andrew Watkins, Former Early Psychosis Programme Clinician

Bondi Early Psychosis Programme Metabolic Audit

2006 – 2008

To understand more about the physical health of young people experiencing a first episode of psychosis within the Bondi Early Psychosis Programme, clinicians conducted a retrospective case record audit. The initial audit focused on people aged 16-27 years, who were engaged with the service in 2004 with subsequent audits of young people's records between 2006 and 2008 (12).

This study, which formed part of then UNSW medical student Hannah Newall's research year project, suggested that metabolic abnormalities, such as obesity, were of considerable concern and happening earlier in life compared to the general population (Figure 3).

Figure 3. Key findings of the retrospective chart audit in First Episode Psychosis service users.



Developing evidence, creating momentum 2008 – 2011

Early wins in metabolic monitoring and intervention led to growing demand for services and increased interest from clinicians. From 2008 onwards, a growing team consolidated the early activities into a suite of programs, but they were still without formal status or budget.

Supporting Healthier Eating: the Rainbow Project

2008 – 2011

The success of the RaDiCaL program created momentum for additional lifestyle interventions. A student dietitian volunteered to run the weekly cooking group and an eight-week, individualised nutrition program, which was embedded within the community early psychosis program between 2008 and 2011.

The cooking group took place in the staff kitchen of the Bondi Junction Community Health Centre. Similar to RaDiCaL, participants would choose a recipe, walk to the local supermarket to collect ingredients, cook together and share the meal as a team. In each session, the group would engage in some informal nutrition education.

Individual sessions were conducted in the on-site consultation rooms, focused on behaviour change techniques and nutrition education. The information and meals from these sessions were outlined in the *Stepping Forward Lifestyle Workbook*.

This was complemented by free access to a local gym for Early Psychosis Programme clients who could work with a personal trainer who volunteered his lunchtime to provide group sessions.

The approach was very successful and led to reduced waist circumference in young people engaged in the Early Psychosis Programme who were receiving antipsychotic medication treatment (13). This provided strong preliminary evidence for the effectiveness of early lifestyle interventions on physical health when offered as part of primary care for people living with severe mental illness.

WEEK FOUR: HEALTHY EATING

Today we will...

- Talk about how to eating to be healthy.
- Discuss meal timing and metabolism.
- Food quality and the types of foods we should eat.
- Portion sizes and how much we should eat.
- Learn the best take away and snack options.

Questions: When should I eat? (Meal Timing)
Answer: Eat 3 times each day.

The Following times are a guide only. Work out your times by deciding what time you wake up each day, eating breakfast within the first hour. Planning meal times means you will know when to eat next, so that you are prepared with something nutritious and not tempted by junk food. Don't be caught off guard.

| Meal | Example Times | Your Meal Times |
|-----------|-------------------------------------|-----------------|
| Breakfast | Early riser: 7am / Late riser: 10am | |
| Lunch | 1 pm | |
| Dinner | 5-7 pm | |

Your meal times need to work with your lifestyle so make sure your plan follows your routine. Don't plan to eat breakfast at 7 am if you have trouble waking up before 10 am.

Question: What should I eat? (Food Quality)
Answer: Eat lean protein, favourable carbohydrates and good fats at every meal and snack.

The TYPE of food we eat is important. We can try to eat some protein, carbohydrate and a very small amount of fat at every meal but this is not always possible.

The quality of the food we eat is also important. For example, we are better off eating lean meat, poultry and fish with steamed or stir fried veggies with some nuts or avocado than a greasy burger and fries.

Question: How much should I eat? (Portion Control)
Answer: Palm sized protein, with as many green vegetables as you like and a sprinkle of good fats.

One to two pieces of fruit daily.

Try to limit white carbohydrates (these are things like pasta, bread, rice and white potato).

If you choose to eat processed foods make sure you have small portions only.

Julio's success story

Julio was a client of the Early Psychosis Programme who felt like he had lost his physical health when he gained 20 kilograms after commencing medication. Through lifestyle intervention support from health sessions via the program, Julio was able to reclaim his physical health and return to surfing! His encouraging story had significant impact, and was featured in both the *Sydney Morning Herald* newspaper and in a local radio segment.

Figure 4. Bondi Early Psychosis Programme success story (newspaper clipping from the *Sydney Morning Herald*, January 11, 2012).



Creation of an On-site Gym

2010

The next step was to introduce an on-site gym within the Bondi Junction Community Health Centre that is part of the Eastern Suburbs Mental Health Service. Free of charge to consumers, it was funded through a small grant from the local children's hospital to buy some basic exercise equipment and a Wii Fit video gaming system, and a meeting room was converted into an exercise space. Student exercise physiologists from the University of NSW, provided individual support to participants, supervised by the clinical nurse consultant within the Early Psychosis Programme with additional oversight from a University of NSW exercise physiologist.

The gym program evolved further when Simon Rosenbaum, an exercise physiologist completing his PhD on physical activity and mental health began work with the Bondi Early Psychosis Programme, and acquired cycling ergometers for research and evaluation. Through additional small grant funding and donations, the team was able to create a fully functioning gym complete with both aerobic and resistance training equipment, open to clients of the community mental health centre five days a week.

“We were all part of a team working and the project was my mental health and that wasn't just that like it was, it wasn't just something that you, you guys are doing to me or something like that – it was something that you were all enabling me to, to do for myself and that was really different from the sort of treatment that I'd gotten prior to that.”

Consumer

Figure 5. Before (a) and after (b) photos of the transformation of a meeting room into a fully functioning gym at the Bondi Junction Community Health Centre



What helped

- Data was our friend. There was not much empirical evidence to support what we were seeing, so we developed that ourselves. We were not primarily researchers and we were far out of our comfort zone but we were able to make a strong case for physical health intervention.
- The release of NSW Health's physical health in mental health policy in 2009 enabled us to leverage this guidance. The later inclusion of our work in the implementation of this policy gave the work recognition and credibility.

What got in the way

- We met resistance frequently. Some administrators were uncomfortable about using the staff kitchen for cooking groups, or reassigning office space to create a gym. There were also concerns about the work health and safety implications of establishing a gym in a mental health service.

What we learned

- It was valuable to include clinicians who were highly motivated to advance their professional education. Many of the original team earned PhD or Masters qualifications through research into KBIM and related projects, which in turn produced data that legitimised the work.
- Academic partnerships were essential, so students could readily find supervisors to support their further studies.

Development of a Positive Cardiometabolic Health Framework

2010 – 2011

Dr Jackie Curtis, Early Psychosis Programme Psychiatrist and Director of Youth Mental Health at the South Eastern Sydney Local Health District, together with medical colleagues Dr Katherine Samaras, an endocrinologist at St Vincent's Hospital and Hannah Newall, a University of New South Wales medical student, developed an *early intervention positive cardiometabolic framework* for use within the mental health service (14) through a registrar training grant received from the NSW Institute of Medical Education and Training (now HETI).

These "algorithms" for adult and later in 2014, adolescent consumers (which have been updated in 2023) highlighted the importance of starting metabolic monitoring when antipsychotic medications are first prescribed, before people develop side effects. This monitoring was then repeated every three to six months.

If 'trigger' points occurred, such as clinically significant weight or waist gains of 5kg or 5cm, or the development of any metabolic abnormality, a trial of lifestyle intervention was recommended. If the risk profile of the person had not improved after three months of lifestyle intervention, then additional interventions were considered, such as medication for high blood cholesterol or hypertension (high blood pressure), or metformin, a medication used to treat glucose abnormalities associated with diabetes and prevent further weight gain (14).

Don't just screen: intervene!

Physical health screening is the first step in identifying and mitigating risks for illness development, but it alone is not enough.

Intervention - where support systems are implemented, barriers to success are dismantled, and problems are addressed through action - is the next crucial step.

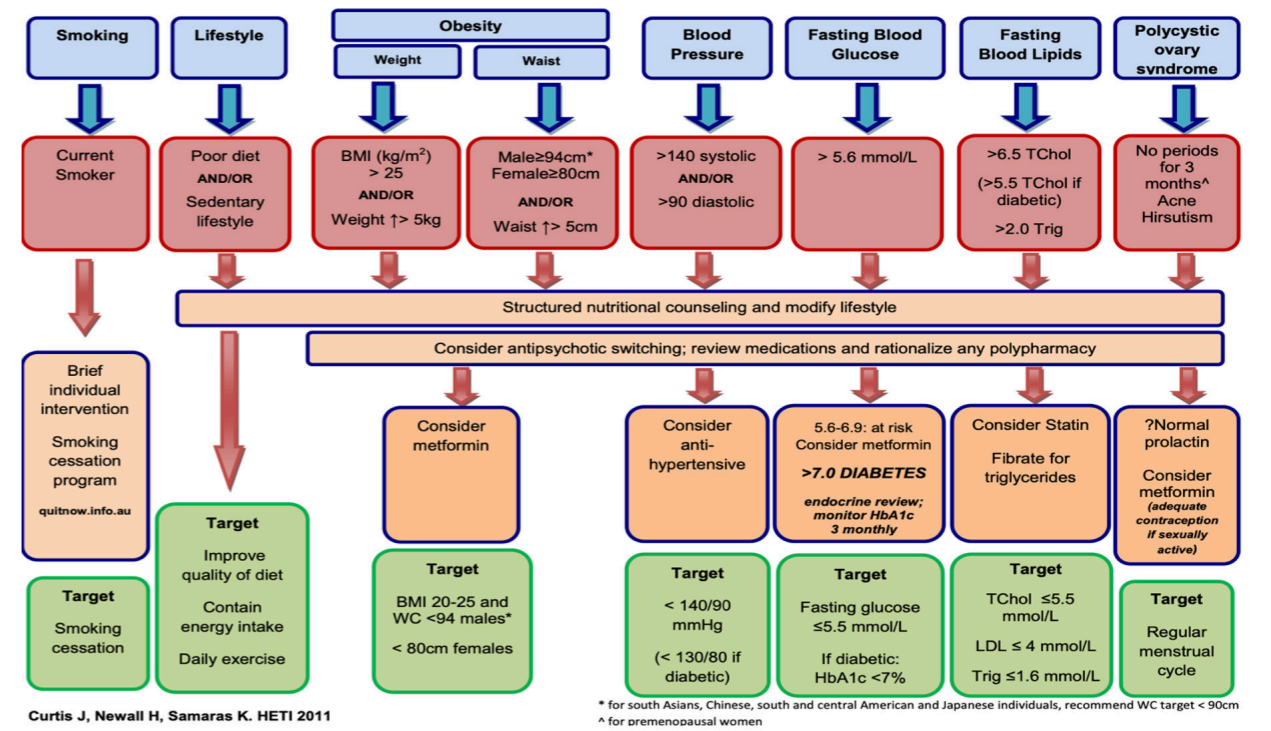
Don't just screen: intervene! is the central tenet of the Positive Cardiometabolic Health Frameworks, step-by-step pathways that guide clinicians in a collaborative intervention process between themselves and consumers to prevent and address physical health issues.

Dr Samaras gave the team confidence to care safely and effectively for people experiencing cardiometabolic effects, offering expertise in metabolic health care and advice on how to apply the research evidence. Working at St Vincent's Hospital in inner Sydney, she had routinely treated patients with severe mental illness and was familiar with the practical challenges of supporting this population.

Dr Samaras was instrumental in increasing metformin prescribing to patients living with psychosis, urging psychiatrists to order the safe and inexpensive medication in many cases, rather than referring to a specialist.

[Note: these original algorithms have now been updated and the current versions are published online at www.mindgardens.org.au/kbimresources/. The revised algorithms are also published at Appendix 1]

Figure 6a. Page 1 of the Early Intervention Positive Cardiometabolic Health Framework.



Curtis J, Newall H, Samaras K. HETI 2011
 * for south Asians, Chinese, south and central American and Japanese individuals, recommend WC target < 90cm
 ^ for premenopausal women

Figure 6b. Page 2 of the Early Intervention Positive Cardiometabolic Health Framework.

History: smoking, exercise, diet, FHx (diabetes, obesity, CVD), gestational diabetes, ethnicity, Polycystic ovary syndrome

Then at least 3 monthly

Examination: weight, BMI, waist circumference, BP

Investigations: Fasting blood glucose and lipids: total cholesterol (TChol); LDL, HDL, triglycerides (Trig); Vitamin D (twice per year).

Don't just SCREEN →

INTERVENE

for all patients in the "red zone"

Specific Pharmacological Interventions:

Consider metformin if:

- impaired glucose
- PCOS
- obesity or rapid weight gain

Metformin therapy: start at 500mg x ½ tablet before breakfast and dinner for two weeks then increase to 500mg bd. Dose can be increased to a maximum of 3 grams daily, though as this is off label treatment, no adverse effects should be tolerated. If side-effects of nausea, abdominal cramping, shift to after meal.

Lipid lowering therapy: (use PBS guidelines)

Statin initiation doses for cholesterol lowering:
 simvastatin 10 mg nocte atorvastatin 10mg nocte
 pravastatin 10mg nocte rosuvastatin 10 mg nocte

Fibrate therapy for triglyceride lowering:
 gemfibrozil 600 mg bd fenofibrate 145 mg mane

Anti hypertensive therapy: Multiple agents are available. Liaise with the GP who can monitor.

Vitamin D:
 •<50 nmol/L: replenish stores: cholecalciferol 4,000 IU per day for one month;
 •maintenance: 1,000 IU daily. Target >80nmol/L.

Interventions:

Nutritional counseling: reduce take away and junk food, reduce energy intake to prevent weight gain, stop soft drinks and juices, increase fibre intake.

Physical activity: structured education-lifestyle intervention. Advise daily physical activity: eg 30 minutes of walking.

If unsuccessful after 3 months in reaching targets, then consider switching and medication interventions below

Switching: Consider switching to a more weight neutral medication. Review diagnosis and ensure ongoing need for all psychotropic medications.

History: smoking, exercise, diet, FHx (diabetes, obesity, CVD), gestational diabetes, ethnicity, Polycystic ovary syndrome

Then at least 3 monthly

Examination: weight, BMI, waist circumference, BP

Investigations: Fasting blood glucose and lipids: total cholesterol (TChol); LDL, HDL, triglycerides (Trig); Vitamin D (twice per year).

Interventions:

Nutritional counseling: reduce take away and junk food, reduce energy intake to prevent weight gain, stop soft drinks and juices, increase fibre intake.

Physical activity: structured education-lifestyle intervention. Advise daily physical activity: eg 30 minutes of walking.

If unsuccessful after 3 months in reaching targets, then consider switching and medication interventions below

Switching: Consider switching to a more weight neutral medication. Review diagnosis and ensure ongoing need for all psychotropic medications.

Screen cardiometabolic risk factors using screening tool (eg Waterreus, et al 2009, Curtis et al 2009 SESLHD); examine and investigate 3 monthly on all clients on psychotropic medications.

NB additional considerations for those on mood stabilizers & clozapine not included here and need to be performed (eg medication plasma levels, TFT's UEC's, ECHO, etc)

Always involve general practitioner, and, where appropriate and possible refer to specialist (eg dietitian/ physician/ diabetic clinic/ exercise physiologist).

NB: Some drugs used in metabolic disease treatment are contraindicated in pregnancy (eg some antihypertensives and lipid lowering drugs). If your patient on any metabolic medications is considering pregnancy, please discuss with their GP

Authors: Curtis J, Newall H, Samaras K. © HETI 2011

References: Alberti K, Zimmet P, Shaw J. "The metabolic syndrome - a new worldwide definition". *Lancet*. 2005; 366: 1059-62. Correll, C. U., P. Manu, et al. "Cardiometabolic risk of second-generation antipsychotic medications during first-time use in children and adolescents". *JAMA*. 2009; 302: 1765-1773. De Hert M, Dekker JM, Wood D, et al. "Cardiovascular disease and diabetes in people with severe mental illness position statement from the European Psychiatric Association (EPA), supported by the European Association for the Study of Diabetes (EASD) and the European Society of Cardiology (ESC)". *European Psychiatry*. 2009; 24: 412-24. Newall H, Myles N, Ward PB, Samaras K, Shiers D, Curtis J. "Efficacy of metformin for prevention of weight gain in psychiatric populations: a review". *Int Clin Psychopharmacol*. 2012; 27: 69-75. Newcomer JW, Hennekens CH. "Severe Mental Illness and Risk of Cardiovascular Disease". *JAMA*. 2007; 298: 1794-6. Waterreus AJ, Laugharne JD. "Screening for the metabolic syndrome in patients receiving antipsychotic treatment: a proposed algorithm". *MJA*. 2009; 190:185-9. Wu, R. R., J. P. Zhao, et al. "Lifestyle intervention and metformin for treatment of antipsychotic-induced weight gain: a randomized controlled trial". *JAMA*. 2008; 299:185-193.

For online access to this fact sheet, please visit <http://www.heti.nsw.gov.au/cmalgorithm>

This algorithm was so helpful in identifying people who needed early lifestyle intervention that it was adopted state-wide in 2011 by NSW Health for use in mental health services (15) and formed part of the implementation of the first NSW Health policy and guideline, *Linking Physical and Mental Health* (2009). Subsequently, an algorithm for adolescents (16), and an algorithm for people living with an intellectual disability (17), were developed through the Bondi Early Psychosis Programme and University of NSW School of Psychiatry. The algorithm has also been adopted by services overseas, where it has undergone regional adaptations, including in the United Kingdom, Canada, Chile, France/French Canada, Finland, Italy, Japan, Norway and Sweden (www.iphys.org.au).

iphYs and the HeAL Declaration

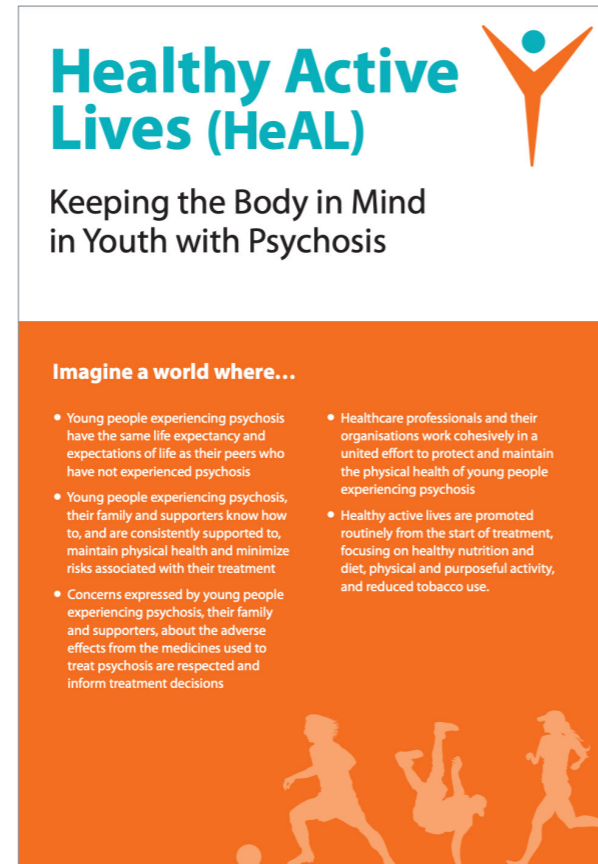
2010 – 2013

In 2010, Dr David Shiers, a UK-based general practitioner based who is also a carer for a family member with a mental illness, presented a symposium on the physical health of young people living with psychosis at the International Early Psychosis Association (IEPA) conference in Amsterdam. The symposium also included presentations by Dr Mario Alvarez-Jimenez, an Australian-based research psychologist, on weight-gain projection after commencement of antipsychotic medication as well as youth mental health epidemiologist Dr Debra Foley and the late Professor Helen Lester, a UK professor of general practice. Also presenting posters at this meeting were Dr Jackie Curtis and Dr Sharman Robertson, a psychiatrist based in Canada.

Following the symposium, a small group of people met over a cup of tea to discuss potential collaborations. They:

- Initiated the International Physical Health in Youth Stream (iphYs) network, which has been co-chaired by Dr Jackie Curtis and Dr David Shiers.
- Agreed to arrange meetings of the iphYs network as adjuncts to future IEPA meetings, and alongside meetings of the International First Episode Vocational Recovery (iFEVR) group, which developed a consensus statement on the rights of young people with psychosis to pursue employment, education and training.
- Continued their iphYs work through meet-ups in Sydney in 2011, San Francisco (2012), Leuven (2013), Sydney (2013), Padua (2014), Tokyo (2014), Toronto (2015), Milan (2016), Boston (2018) and Lausanne (2023). These meetings resulted in collaboration between clinicians, researchers, consumers and families and carers from 11 countries around the world. The aim of this international collaboration was to focus attention on physical health and later to develop a consensus statement on improving the physical health of young people living with

Figure 7a. Front page of the HeAL declaration brochure (www.iphys.org.au).



psychosis. This statement recognised the evidence that these young people were more prone to rapid weight-gain and cardiometabolic abnormalities (such as changes to blood glucose and cholesterol levels) and outlined actions to reduce such risks. The inspiration for this consensus statement came from the St Vincent Declaration, which detailed best-practice care and aspirational five-year health outcome targets for people with diabetes. The resulting Healthy Active Lives (HeAL) declaration for youth living with psychosis included a set of principles, processes and standards to proactively address the risks for future physical illnesses (www.iphys.org.au) (Figure 7) (18).

Core contributors to the HeAL declaration were:

Jackie Curtis, David Shiers, Helen Lester, Eoin Killackey, Mario Alvarez-Jimenez, Philip Ward, Debra Foley, Katherine Samaras and the late Stephanie Ewart.

Additional contributions were made by:

- Julio De La Torre, Janelle Abbott and young consumers from the Bondi Early Psychosis Programme, Sydney.
- Members of the iphYs working group.
- Christoph Correll, Marc De Hert, Richard Holt, Alex J Mitchell, Davy Vancampfort and Jonathan Champion who provided expert review and comments.
- Janet Meagher from the Australian National Mental Health Commission.

- NSW Health, which funded iphYs meetings in Sydney and San Francisco.
- NSW Mental Health Commissioner, Mr John Feneley, who enabled the launch in NSW.

The Healthy Active Lives (HeAL) declaration was officially launched at the 2014 IEPA Conference in Tokyo (18).

At its launch in 2014, The HeAL declaration was endorsed by three international organisations, including IEPA, and 29 national organisations. It has subsequently been translated into seven languages other than English: Spanish, Finnish, Italian, Japanese, Norwegian, Portuguese and Swedish.

What helped

- Health leaders in Australia and internationally responded positively to the aspirational goals and decision support contained in the algorithm.

What got in the way

- New services and interventions were dependent on the energy of individuals who could see the importance of the work and were willing to advocate for it; there was little institutional support, or funding.

What we learned

- That advocacy takes time, and the voices of people with lived experience are instrumental to the success and take-up of initiatives like this one.
- That “competitive altruism” between countries is an effective advocacy tool; at the same time as collaborating, individuals and governments wanted to demonstrate their international leadership.

Figure 7b. Key principles and rights of young people living with psychosis identified in the HeAL declaration.



Keeping the Body in Mind (KBIM) Pilot Study

2013-2014

The NSW Health Mental Health and Drug and Alcohol Office committed 12 months of funding to formally evaluate the KBIM pilot program in 2012. This funding supported a clinical nurse consultant, dietitian, exercise physiologist and peer support worker as the core KBIM intervention team embedded within the community mental health service.

The KBIM pilot offered lifestyle intervention as part of routine care to young people experiencing psychotic illness for the first time. Based alongside the Bondi Early Psychosis Programme, it offered support to young people who had been taking antipsychotic medication for less than four weeks, to determine whether weight gain could be prevented in a 'real-world' scenario (19). The KBIM pilot included a comprehensive physical assessment and follow-up by the clinical nurse consultant; support from a peer support worker to navigate and use available services; weekly individualised appointments with the dietitian and exercise physiologist; access to a free onsite gym under the guidance of student exercise physiologists; and weekly sports and cooking groups (Figure 8).

Results from the KBIM site were compared to another service in Sydney that provided routine mental health care for recent onset psychosis, but without

the lifestyle intervention components. At the 12-week follow-up analysis, the KBIM intervention had successfully prevented weight-gain (average increase of only 1.8kg) and change in waist circumference (average increase of only 0.1cm) (19).

In comparison, participants in the control site receiving standard mental healthcare, gained an average 7.8kg of body weight and an average 7.1cm in waist circumference, over the 12-weeks. At the KBIM intervention site, clinically significant weight-gain ($\geq 7\%$ of baseline weight) was limited to 13% of clients, compared to 75% at the usual care site (Figure 9), (19).

Figure 9. Percentage of people who had clinically significant weight-gain at 12 weeks.

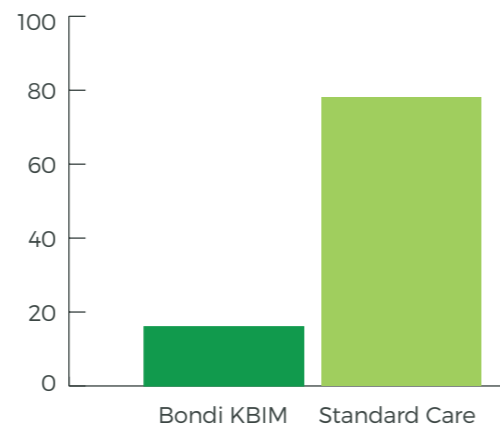


Figure 8. Key components of the 2013 KBIM pilot intervention.

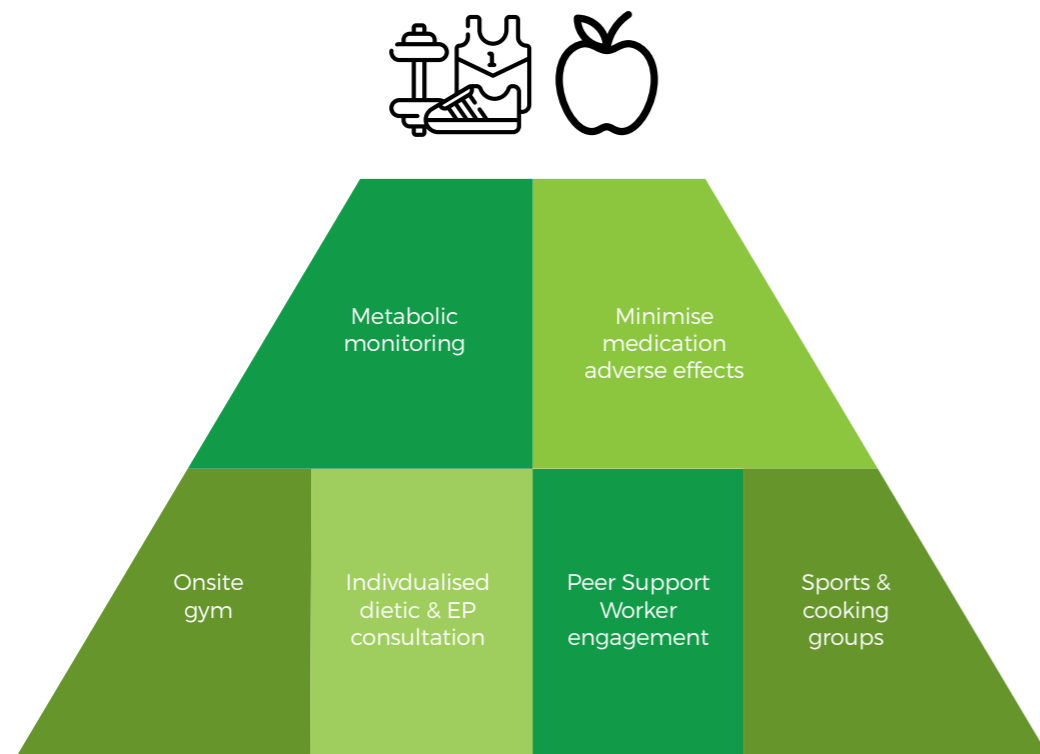


Figure 10a. First Episode Psychosis KBIM participant comments shared during the qualitative study.

Pre-program

"I put on 10 kilos from just eating, and I could not stop eating. I just had to eat. It was just horrible, and I was tired, I hated being on whatever (medication) that was..."

"...but certain drugs, antipsychotic drugs, make you extremely hungry and you put on weight."

"I think before I came up here my self-esteem was low because I wasn't happy with my body."

Getting involved in the program

"I lost my job and other things because of being in there (hospital). It gave me somewhere to go and something to do, and something to get up for. Not only that, but when I would get up and go there I'd feel a lot better about myself."

"I found that from the very beginning the staff here were very friendly... they wanted to get to know you. They were good mentors."

"Structure, that a big - when you don't have structure and you don't have something to be doing every day, that really can put you in a very dark place."

Program impacts

"I think that the more that I ate healthy food, I also noticed the more that was helping me, I just felt better."

"Since that's levelled out and I've lost the weight and everything, I think my self-esteem's been able to improve now."

"I have more energy now that I've started exercising."

"I'm not as lethargic, which doesn't make me as depressed and stuff."

The KBIM intervention also produced additional findings:

1. Higher aerobic exercise capacity was associated with a higher level of functioning - how well someone can perform everyday activities, tasks and responsibilities. (20).
2. Participants experienced improved cardiorespiratory fitness (a measure of how well heart and lungs work together to supply oxygen to muscles during physical activity).
3. Participants increased the number of minutes per week they engaged in physical activity (21).
4. Participants experienced a 47% reduction in the intake of discretionary foods such as sweet biscuits and soft drinks, a 24% reduction in energy intake, a 26% reduction in sodium intake and an increase in diet quality (22).

Qualitative interviews with KBIM participants were conducted after the 12-week intervention. After thematic analysis (23), four key common themes were identified:

- the role of physical health in mental health recovery;
- graduation to a sustainable healthy lifestyle;
- peer interactions; and
- staff interactions.

Support, encouragement, and positive interactions with KBIM staff members were discussed in detail by the majority of participants, and viewed as essential to sustainable improvement in participant's physical health. Goal setting and metabolic screening were embraced by participants as core elements of the program.

Led by Professor Katherine Boydell, body mapping research was employed to visually depict participants' experiences of the program. Body mapping is an arts-based research tool to explore bodily and psychological feelings which can often be difficult to communicate just by talking about the experience. Six participants engaged in life-sized body outline (maps) followed by a creative and reflective process to fill the outline. This exercise highlighted the common and important theme of the link between body and mind for a person's journey to recovery (24).

"You are in survival mode up until the time you engage in mental health services and then when you finally start getting support you have the freedom to admit how bad it is and everything goes really downhill - because you're suddenly aware of how messed up your situation is. That's hard because you feel like you're not making progress, but the great thing about the physical health program is that it's quantifiable, your fitness, how much weight you've put on. I was back in control of how to improve my situation and it helped settle my mind a lot."

Consumer

Figures 10b & 10c. Body mapping images demonstrating young people's journeys to recovery.

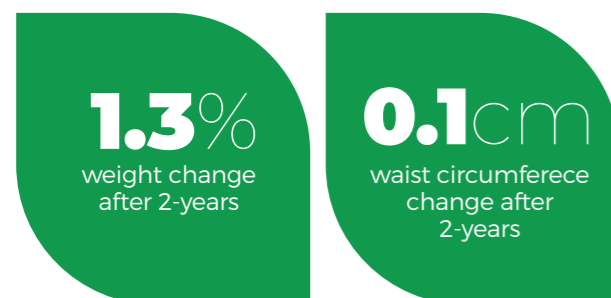


2-year follow-up

Following the primary analyses at 12 weeks, KBIM participants continued to have access to individualised dietitian and exercise physiologist consultations, onsite gym, weekly sports group and weekly cooking group, though with lower follow-up intensity from clinicians unless participants gained weight or developed metabolic abnormalities.

The extended program was effective in minimising weight and waist measurement increases (**Figure 11**) (25), and improvements in diet quality and reductions in discretionary food were sustained at the two year mark (26).

Figure 11. Weight and waist circumference change after 2 years in KBIM pilot participants.



What helped

- Individuals, local foundations, health services and government funders gave small donations and grants that were enough to get started and then keep going.
- Student placements were an excellent source of cost-effective staffing and introduced us to passionate, energetic young clinicians, some of whom still work with us today.

What got in the way

- Clinicians were initially slow to refer participants, and sceptical about the role of mental health specialists in supporting consumers' physical health.
- There was no recurrent funding in the early years, even as the programs scaled up and demonstrated real effectiveness.

What we learned

- KBIM Peer workers had a different role to more traditional peer workers. Differentiating this role into a peer health coach model made them more effective in engaging consumers, but required negotiation with peer leadership and service managers.

Capacity, reach, impact: taking the idea to scale (2014 – current)

By the early 2010s, KBIM was established in the Bondi Centre and widely acknowledged across the South Eastern Sydney Local Health District. The next challenges were to establish a powerful evidence base – the kind that could be used to justify expansion beyond the local area – and to look holistically at additional needs and opportunities: new physical health domains, new populations, new approaches to service delivery.

2014

In 2014, following the completion of the 12-month KBIM pilot program, South Eastern Sydney Local Health District mental health leaders made a major commitment to improve the physical health of mental health service users, investing in recurrently-funded KBIM teams at all three community mental health services in the region: Eastern Suburbs, St George and Sutherland. In 2015, they were joined by a fourth, permanent, KBIM team, based in Maroubra in the Eastern Suburbs, to boost capacity in the district's largest catchment area.

- Each KBIM team includes;

Full-time Clinical Nurse Consultant

- Full-time Dietitian
- Full-time Exercise Physiologist
- Part-time (0.4 FTE) Peer Worker

KBIM Translational Research Team

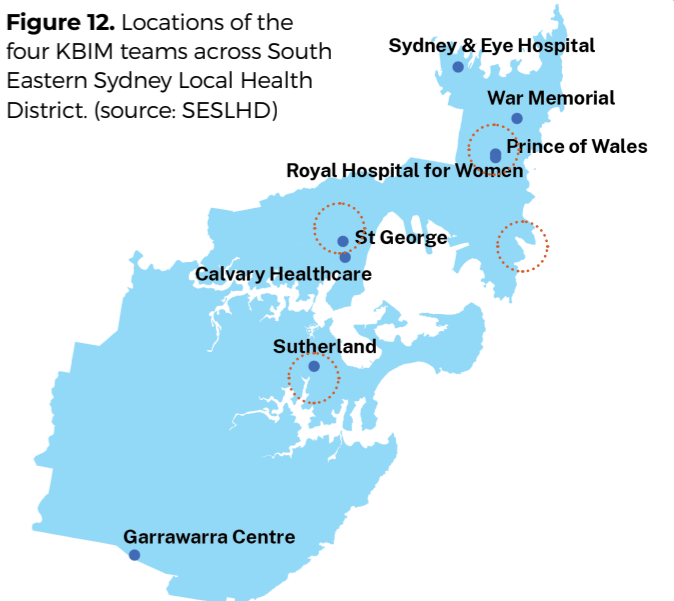
2014

In 2014, a research officer was employed through the University of NSW to coordinate research activities and evaluate KBIM clinical activities. This role was complemented by numerous KBIM clinicians undertaking Masters or PhD research in which they evaluated KBIM activities. This in turn facilitated a considerable increase in undergraduate medical, exercise physiology and dietetic students undertaking research projects with KBIM.

KBIM-specific research activities:

- Culminated in ethics approval for evaluation of KBIM activities delivered as part of routine clinical care.

Figure 12. Locations of the four KBIM teams across South Eastern Sydney Local Health District. (source: SESLHD)



- Facilitated substantial evaluation and restructuring of clinical activities.
- Led to dissemination of KBIM findings through multiple avenues: grand rounds, in-services, national and international conferences, South Eastern Sydney Local Health District reports, peer-reviewed journal publications, and referenced in guidelines including:
 - NSW Mental health Commission:
 - Physical Health and Wellbeing: Evidence Guide
 - Royal Australian and New Zealand College of Psychiatrists:
 - Keeping the Body and Mind Together: Improving the physical health and life expectancy of people with serious mental illness
 - Royal Australian and New Zealand College of Psychiatrists clinical practice guidelines for the management of schizophrenia and related disorders (2016)



A Tribute to David Pearce

The late David Pearce, Director of Mental Health for the South Eastern Sydney Local Health District

"David Pearce's visionary leadership drove the remarkable expansion of the KBIM teams, following the success of the pilot study. Without his support, subsequent achievements - including the expansion to the UK and the development of the influential HeAL declaration - would not have been possible.

As the Director of Mental Health in the South Eastern Sydney LHD and later as Executive Director of Mental Health for NSW, David passionately championed physical health in mental health services, navigating challenges to integrate cross-disciplinary work within the traditional mental health system.

Steadfast and dedicated to consumers' interests, David leaves a lasting legacy that inspires transformative advancement in mental health care."

Professor Jackie Curtis

What helped

- High-level support and sponsorship from mental health leaders at a district level.
- Employment of peer workers and introduction of co-design approaches, to ensure the services resonated with consumers and were meaningfully evaluated.

What got in the way

- Limited university training in physical health care for mental health clinicians.
- Minimal experience working with dietitians, exercise physiologists and other allied health professionals.

What we learned

- Collaboration between academics and clinicians is critical in developing a translational research culture.

Keeping our Staff in Mind (KoSiM)

2014 - 2016

Mental health services have typically not provided lifestyle intervention to consumers, meaning staff may have limited understanding of how to support physical health.

The Keeping our Staff in Mind program (KoSiM) (27) program was designed as a pragmatic single-arm intervention offered to clinical and non-clinical employees of all mental health services within South Eastern Sydney Local Health District, intended to familiarise them with core KBIM concepts.

Staff who participated were offered an individualised program over four weeks, delivered by the KBIM clinical nurse consultant, dietitian and exercise physiologist, with a 16-week follow-up. They completed an initial assessment and goal setting session with each clinician, followed by four individualised sessions with the dietitian and/or exercise physiologist, dependent on their personal choice and health goals.

A voluntary Metabolic-Barrier, Attitudes, Confidence and Knowledge (M-BACK) questionnaire assessed staff knowledge and capacity to protect the physical health of people living with mental illness (28). Survey participants could self-refer to the KoSiM program at the end of the survey, with assessments conducted at baseline and 16 weeks.

In total, 212 of the 702 employees (31%) provided consent and completed baseline assessments and 103 staff members across all disciplines completed follow-up assessments. Scores improved significantly for the M-BACK questionnaire following the KoSiM intervention (29), demonstrating that a brief physical health program which includes education can improve mental health staff's perspectives towards providing physical health care to their clients.

Additionally, significant reductions were found for waist circumference, caloric intake, discretionary food intake and sedentary behaviour, as well as significant improvements in inclusion of the core food groups and cardiorespiratory fitness providing mental health staff with (Figure 13), (29-31) at the 16 week follow up.

Figure 13. Impact of the KoSiM intervention on the health of South Eastern Sydney Local Health District Mental Health staff at 16-week follow-up.



KBIM First Episode Psychosis Replication: Routine Care for Early Psychosis Programmes

2015-current

After staff had completed the KoSiM program, the KBIM program was expanded to the three early psychosis services across the district, following the model successfully trialled in the KBIM pilot. Participants who completed the 12-week program were offered ongoing support depending on clinician capacity.

An evaluation was conducted of people experiencing a first episode of psychosis who engaged with KBIM between 2015 and 2019, finding strikingly similar results to the KBIM pilot but in a much larger group of people; 182 people engaged with KBIM and 134 had baseline and follow-up measures (32).

Key findings of the replication study compared to the KBIM pilot intervention are presented in **Figure 14**.

Figure 14. Comparison of (i) 12-week weight and waist circumference changes and (ii) % of people who experienced clinically significant weight gain.

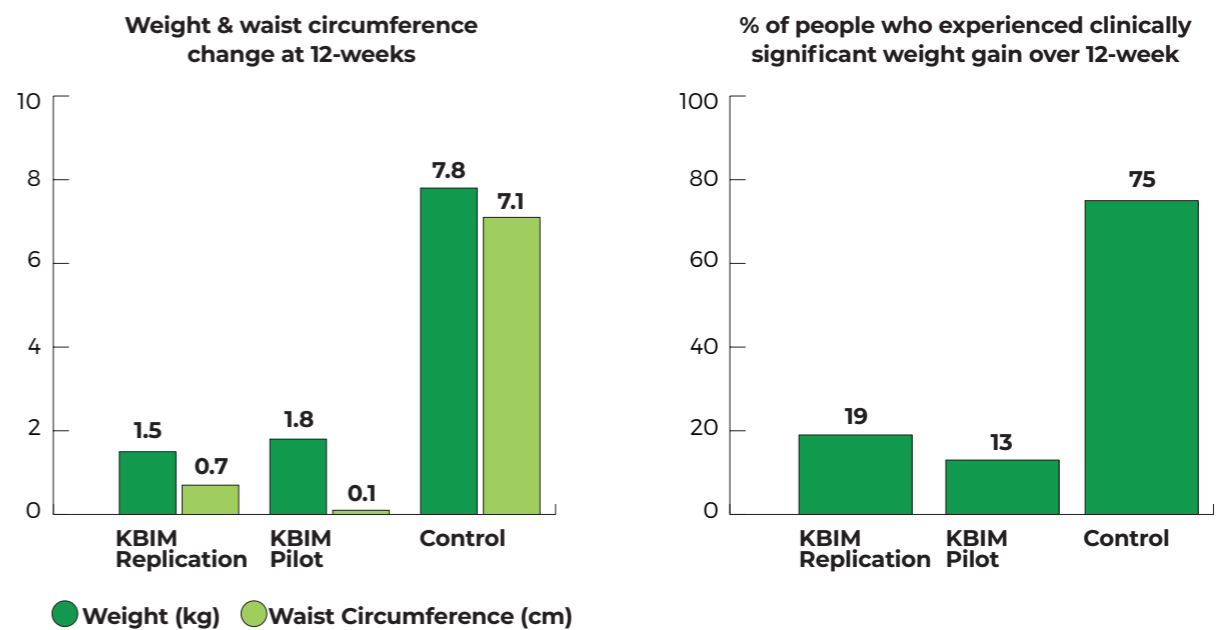
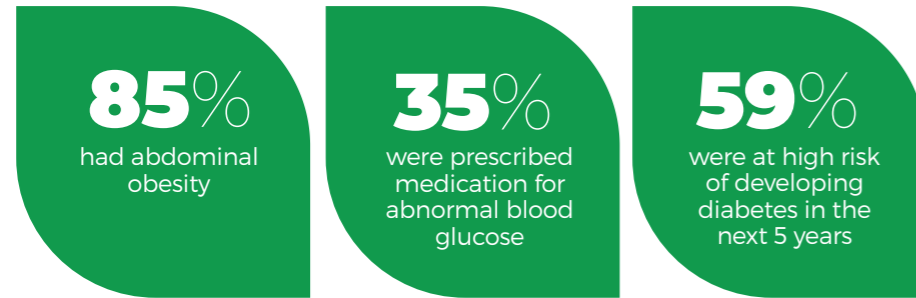


Figure 15. Key cardiometabolic findings of the clozapine cohort.



Clozapine Clinic & Long-Acting Injectable Clinic Metabolic Audit

Clozapine Clinic 2015 – 2016

Clozapine can be effective for people who do not respond to other antipsychotic medications, but the metabolic effects can be substantial and cause concerning adverse health changes (33). A cross-sectional assessment was completed to determine the need for physical health support for people receiving clozapine treatment within the South Eastern Sydney Local Health District (34). Between 2015 and 2016, 416 of the 451 people (92.2%) receiving clozapine therapy within the district’s mental health services completed these assessments. Key cardiometabolic findings are described in **Figure 15**.

Lifestyle factors appeared to be a driving force, with a high prevalence of smoking, sedentary behaviour, and poor diet quality. Few participants had ever engaged in weight management or physical activity support (18% and 22% respectively), though 41% of participants expressed interest in a lifestyle program (34).

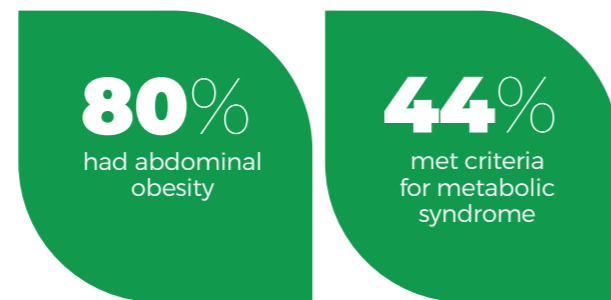
Long-Acting Injectables Clinic 2016 – 2017

People receiving long-acting injectable antipsychotic treatment at community clinics within the South Eastern Sydney Local Health District were prioritised for physical health assessment. Of 517 eligible people, 301 (58.2%) participated. They:

- Had an average age of 44 years
- Were mostly male (65%)
- Most frequently had a diagnosis of schizophrenia or schizoaffective disorder (92%)

Key cardiometabolic findings are in **Figure 16** below.

Figure 16. Key cardiometabolic risk factor findings for the long-acting injectable cohort.



The group also had high smoking rates (62%), poor diet quality and frequent sedentary behaviour (35).

“I think in a lot of services a lot of clinicians think, ‘well we’re not physical health people so we don’t do that’. I’ve always had the view that this is just risk – the same as self-harm or suicidal risk – and everybody should know how to assess it. You don’t have to solve the problem but you need to know when it needs to be escalated to somebody who can solve the problem.”

Clinician

What helped

- The KoSiM program helped clinicians and other staff understand the rationale for KBIM and experience first-hand the roles of exercise physiologists and dietitians.
- Peer support workers and other staff actively promoting engagement eg by encouraging consumers to use a Wii Fit while waiting for appointments, and having informal conversations.

What got in the way

- Consumers often reflexively declined interventions offered by mental health service providers.
- Attendance was patchy, as consumers dealt with transport and other logistical issues as well as fluctuating motivation.
- Group programs did not always allow for the level of individual attention consumers needed.

What we learned

- Maintaining meticulous records in a busy clinic is a big ask, as clinicians experience “documentation fatigue”. Employing doctorate or Masters students, who will earn their degree from research into a service, can help with motivation and lift data quality and completeness.

Smoking Cessation in Early Psychosis Services: y-QUIT

2012

A systematic meta-analysis (36) investigated the link between tobacco smoking and psychosis onset. It found that about 60% of people experiencing first-episode psychosis were smokers. The odds of smoking among this group were about six times higher than in individuals without first-episode psychosis, and smoking typically began around 5.3 years before the onset of psychosis. These findings emphasised the importance of addressing tobacco use as a critical aspect of comprehensive care for individuals dealing with first-episode psychosis.

2017

A two-phase project called y-QUIT (37) targeted tobacco smoking in young people experiencing a first-episode or at high risk of psychosis within South Eastern Sydney Local Health District, employing a tobacco treatment specialist embedded in the early psychosis program. This project was funded by an innovation grant awarded to KBIM.

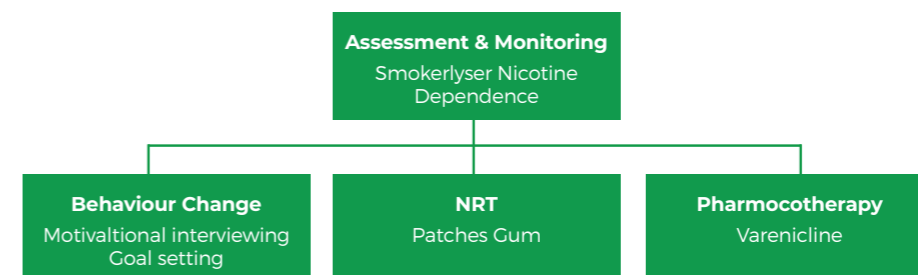
- In Phase 1 (2017), the prevalence of smoking was 48% (n=61) and was higher in males than females.
- In Phase 2 (2017-18), tobacco smokers were offered a 12-week tailored smoking cessation intervention. This involved pharmacological treatment (nicotine replacement therapy and/or varenicline) and behaviour change techniques, such as motivational interviewing (**Figure 17**). People who declined the formal 12-week intervention were offered a brief intervention session.

Forty-one of the 61 people identified as smokers participated in either the 12-week intervention (n=21, 34%) or the brief intervention (n=20, 33%). A significant percentage of participants did not follow through with the entire program (48% in the 12-week intervention and 25% in the brief intervention). In those who completed the intervention, six people achieved smoking cessation and a further nine participants reduced the number of cigarettes smoked, nicotine dependence and exhaled carbon monoxide (37). These results suggest that tobacco smoking screening and intervention is achievable and beneficial in a mental health service.

Impact of y-QUIT

- Clinicians are now more likely to offer smoking cessation services like y-QUIT to consumers.
- Clinicians requested tobacco cessation programs for adult consumers, leading to the establishment of Keep Quitting in Mind (KQIM).
- Weekly clinics were established at Maroubra and at the Bondi Centre for mental health consumers aiming to quit smoking. The clinics provide Nicotine Replacement Therapy (NRT) and counselling/ motivational interviewing and use breath monitoring devices like Smokerlyzer to support engagement and monitoring of smoking -levels.

Figure 17. y-QUIT intervention components.



KBIM Adult Program

2017 - current

Following the success of the Bondi youth early psychosis KBIM interventions, and the establishment of the additional KBIM teams, the program was expanded to adult community mental health consumers. The objective was to encourage consumers to engage with the KBIM teams, alongside their usual mental health care. That meant making the KBIM teams as accessible as possible to potential participants.

KBIM clinicians were rostered to be available on-site during clozapine clinic hours, both for assessment and individualised interventions. Consumers were either referred to KBIM by a psychiatrist or nurse consultant, or were approached by the peer support worker in the clozapine clinic waiting room. These consumers were also invited to participate in a KBIM adult group program, which was later extended to people receiving long-acting injectable antipsychotic medication, and then any client of the community mental health service. The program, which took place either at the community mental health centre or at a recreational community centre, began as an 18-week intervention of 1-hour sessions, alternating between nutrition and physical activity.

The nutrition session comprised 15-minutes of education followed by 45-minutes of cooking led by the KBIM dietitian, sometimes with student dietitians.

The exercise session comprised 45-60 minutes of physical activity either onsite in the gym or at a local public area and tailored to participants' ability by the exercise physiologist. Student exercise physiologist students also joined the sessions as part of their university practicum placements. In addition, smoking cessation support was offered every week, including breath carbon monoxide (Smokerlyzer) assessment and provision of nicotine replacement therapy, supported by the KBIM clinical nurse consultant.

After a pilot phase, feedback from participants and KBIM clinicians led to a program restructure, to 12 weeks of two-hour sessions – one hour each for nutrition and physical activity with the participant group split to engage in both activities in a cross-over design. Smoking cessation support was provided immediately before, during or immediately after the group. In addition, participants were assigned a "health coach" from the KBIM team to provide individual support outside of the group sessions.

The program engaged a total of 180 participants across four sites from August 2017 to August 2019.

In the 12-week program, 114 individuals participated, and 27% successfully completed 9 or more sessions. In the 18-week program, 94 individuals participated, with a quarter completing 13 or more sessions. Notably, 58 participants chose to repeat the program, averaging 2.5 repetitions, while 25 individuals repeated it three or more times.

Figure 18. Core KBIM program components in 2020.



Figure 19. Images from the adult group lifestyle program.

The results showed that weight gain could be mitigated, with a slight average reduction in waist circumference of 1.3 cm in the 12-week group and 1.5cm in the 18-week group, highlighting both the program's effectiveness and the commitment of individuals who chose to repeat it multiple times.

Similar to the early psychosis interventions, South Eastern Sydney Local Health District provided direct funding for the group program, including site costs, cooking ingredients and exercise equipment. Nicotine replacement therapy was provided free of charge by the hospital pharmacy.

What helped

- Individual health coaching to complement group training components.
- Home visits and telehealth appointments helped build consumers' commitment to change and keep them on track.

What got in the way

- Some consumers (and clinicians) had unrealistic expectations for outcomes. Some goals were not in line with consumers' current living situations, making it hard to maintain attendance and achievements.
- The COVID-19 pandemic restrictions interrupted continuity of support for some consumers.

What we learned

- Social connection may be a key ingredient supporting consumer engagement; lifestyle interventions improve overall engagement with mental health services.
- However there is still a gap in knowledge about any mental health benefits of the KBIM interventions.

Keep Quitting In Mind (KQIM)

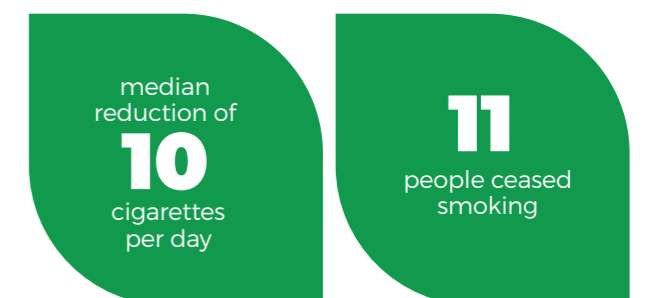
2018 - current

After the success of y-QUIT in youth living with psychosis, smoking cessation support was offered to adults engaged with the South Eastern Sydney Local Health District mental health service and named Keep Quitting in Mind (KQIM). KQIM is an individualised smoking cessation intervention delivered by a tobacco cessation specialist.

Consumers engage in an initial face-to-face assessment with weekly or fortnightly follow-up sessions in person or over the phone. Treatment can include education, nicotine replacement therapies (patches, gum, inhalers and lozenges) provided free of charge, and behavioural interventions such as motivational interviewing and carbon monoxide monitoring. Duration is based on the consumer's goals and clinical need.

An evaluation of KQIM was conducted on the 99 consumers who engaged in the program between July 2018 and December 2020. Participants attended a median three sessions with the tobacco treatment specialist and were engaged in KQIM for a median 41 days. Key findings from KQIM are described in **Figure 20**.

Figure 20. Key outcomes from the KQIM intervention.



KQIM – Scale up of Tobacco Treatment Services: Peer Worker & Staff Training

2022 - current

To scale up KQIM, additional components were implemented to enhance the program's effectiveness in supporting individuals with mental illness in their quit-smoking journey. Key projects included:

- **Engagement of a Smoking Cessation Peer Worker,** with lived experience of mental illness and a successful quit-smoking journey, to provide real-world support and navigation assistance for KQIM participants. This staff member played a vital role in making smoking cessation related programs more accessible and offering personalised support. Following their appointment, there was an increase in consumer referrals to the program, longer enrolment durations, and higher rates of smoking cessation success. The peer worker was funded through a Prince of Wales Hospital Foundation grant.
- **Staff Training and Education Enhancement Programme:** The KBIM team collaborated with South Eastern Sydney Local Health District to engage a project officer to manage the implementation and evaluation of a staff training program focused on smoking and vaping cessation for individuals with mental illness. The project officer was funded through a NSW Ministry of Health grant. The training package included:
 - **Mindgardens Smoking Cessation Cardiometabolic Framework Training:** Clinicians learned how to use the new framework, which provides screening and intervention support to treat consumers who smoke. The framework was co-designed with expert stakeholders, including youth experiencing psychosis, and its publication on the NSW Ministry Physical Health Guidelines portal further increased its accessibility.
 - **Smoking and Vaping Education for Mental Health Consumers:** The program's dedicated Tobacco Treatment Specialist, in collaboration with the Smoking Cessation Peer Worker, delivered tailored training and education on smoking and vaping to mental health consumers, empowering participants to make informed decisions about their smoking habits and encouraging quit-smoking efforts.

The successful implementation of these components within the KQIM program underscored its commitment to promoting smoking cessation among individuals with mental illness, fostering positive change in the lives of participants.

KBIM Extend

2019-2020

A need for longer-term support was identified and beginning in September 2019, KBIM Extend (KBIM-X) was offered to participants on completion of the intensive 12-week KBIM group program, through a partnership with Mission Australia, a community-managed organisation.

KBIM-X was a community outreach, peer-led health coaching program, delivered over 12 weeks and able to be extended on participants' request. Participants were offered 12 individual sessions and weekly group health coaching comprising physical activity, relaxation, nutrition education and cooking sessions. Participants also had access to the KBIM-X personal trainer, a KBIM exercise physiologist and a KBIM dietitian to develop exercise and meal plans and for ongoing support including motivational interviewing.

Between September 2019 and June 2020, there were 30 program participants and 25 (83%) completed the program. Limited physical changes were noted in this pilot, but the physical health domain of the quality-of-life scale improved. Qualitative feedback, based on interviews with KBIM-X participants about the peer health coaching model is described in **Figure 21**. KBIM-X was discontinued in mid-2020, when further funding was not made available. This occurred in the context of the COVID-19 pandemic restrictions on face-to-face meetings.

In-patient Units

2015 - current

Most KBIM projects, and physical health care for mental health consumers more generally, have focused on community-based clinics. It is important to extend the benefits of these approaches to mental health in-patient units, and some pilot projects have been implemented in hospital settings within the South Eastern Sydney Local Health District.

A comprehensive physical health care pilot was conducted at the Kiloh Centre, a 46-bed adult, inpatient, acute and sub-acute unit located in the Prince of Wales Hospital, between August 2020 and September 2021, initiated independently by an exercise physiologist and former KBIM student.

Consumers at the unit have a serious mental illness, and some are involuntarily admitted under the NSW Mental Health Act. They were invited during their admission to attend a weekly, two-hour physical health clinic, advertised through ward rounds, daily huddles and posters in the wards, and staffed by:

- A doctor and a registered nurse, able to conduct a comprehensive physical examination and blood-borne virus screening consistent with the NSW Health policy Physical Health Care for People Living With Mental Health Issues

Figure 21. Qualitative feedback from KBIM-X participants.



- An exercise physiologist, to conduct cardiometabolic and modified functional movement screening
- A dietitian, to take a diet history and conduct assessment of bowels, appetite and nutritional impact factors
- A physical health clinical nurse educator, to offer health promotion, chronic disease management and nursing-specific interventions.

During the pilot study period, 215 consumers attended the clinic, with an average age of 42.5 years. After the full physical work-up, exercise physiology was the most popular service. The clinical team identified 84 new physical health issues in 62 consumers (29% of the cohort), with gastroenterological, cardiovascular and dermatological disorders the most commonly identified. Of the total interventions offered, 41% were lifestyle-based, with 60% of consumers receiving exercise physiology and/or dietetic support. Details of consumers' physical health care were added to their discharge records, for continuity when they returned to the community.

The project showed that a physical health clinic within an acute mental health in-patient unit was effective in identifying and responding to physical health issues that might otherwise have gone undiagnosed, and was also an efficient use of clinicians' time: having several specialties available at the same time each week meant consumers could see multiple clinicians for a holistic approach to their health, while clinicians were less likely to be under- or over-utilised during the sessions. The dietary needs of

people in mental health in-patient units differ from those of other hospital departments, which generally prioritise preventing malnutrition and under-nutrition. A working group was created in South Eastern Sydney Local Health District's mental health division to implement new nutrition standards (38), and a separate pilot intervention of a group nutrition education program, designed by a KBIM dietitian and delivered by a student dietitian, was initiated in a rehabilitation unit to accompany the established cooking group. The program appears feasible and acceptable, however there has been no formal evaluation and the effectiveness on physical health outcomes is yet to be explored.

Gyms have been set up in several mental health in-patient units in the district, supervised by exercise physiologists, exercise physiology students and occupational therapists. These important starting points will likely enable more formalised and consistent intervention in the future.

In 2018, psychiatrists from the KBIM program led a three-month, system change pilot for smoking cessation within an Eastern Suburbs Mental Health Service in-patient unit (39), including tobacco screening, staff education, appointment of a smoking cessation nurse champion, development of no-smoking hospital policies, and provision of nicotine replacement therapy. After the intervention, recording of consumers' smoking status increased from 2% to 11% and provision of nicotine replacement therapy increased from 11% to 27%. There was also a numerical decrease in violent incidents recorded per month, which did not reach statistical significance.

headspace Active

2016 - current

People whose mental state is considered “at-risk” for psychosis are more likely to have poor lifestyle behaviours (40), which may be exacerbated if they transition to a psychotic disorder and take antipsychotic medication. This means there is an important opportunity to target physical health interventions during both the at-risk and transition phases. These phases have typically been managed separately within the Australian health system, and new strategies were required to address people’s needs at all points during this critical time.

The headspace Active program was designed in 2016 as a study intervention targeting 14 to 25-year-olds at risk for psychosis, for whom there were no KBIM services available at the time. The 12-week program was delivered by an exercise physiologist, alongside standard mental health care within a headspace centre in Bondi Junction.

headspace is a free, youth health service that supports young people aged 12 to 25, with mental health, physical health, alcohol and other substance use, and work or study. There are more than 140 headspace centres across Australia, funded by the national government, and they typically focus on mild to moderate mental health conditions.

In headspace Active, young people at risk of psychosis participated in exercise sessions and one-to-one behavioural counselling with an exercise physiologist. Participants reported that the intervention resulted in improvements in physical activity levels, motivation and sleep quality, and reductions in depressive symptoms (41). They also expressed high satisfaction with the program.

The positive results supported continued integration of lifestyle support after the study was completed. *headspace* Bondi Junction employed a part-time exercise physiologist to offer exercise intervention to people engaged with the service, which continues today.

In 2017, a further cross-sectional study was conducted involving young people engaged with the Eastern Suburbs Mental Health Service Early Psychosis Program’s CASPAR service (specifically for young people at risk of psychosis) and *headspace* Bondi Junction. The study explored the food intake, nutritional knowledge and eating behaviours of young people experiencing a first episode of psychosis, “at-risk” mental state, depression or anxiety. The study results indicated poor diet quality and nutrition knowledge in all groups, with higher food intake and disordered eating behaviours in those prescribed antipsychotic medications (42). In the future, there is potential to expand KBIM services more formally to both CASPAR and *headspace* clients, to ensure lifestyle intervention and support is available to youth experiencing mental health issues, no matter what their present level of acuity.

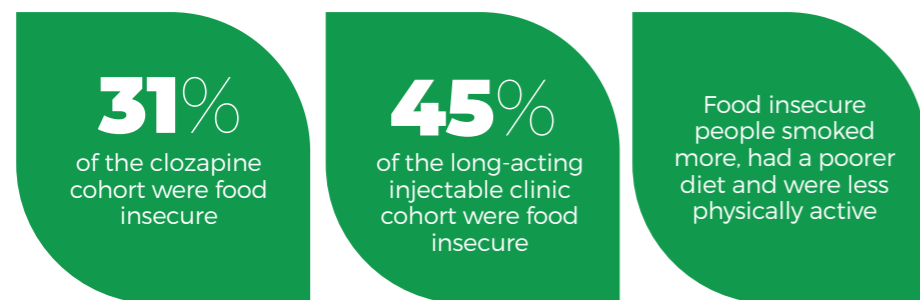
KBIM Food Secure

2016 - current

Food insecurity (a lack of access to enough safe and nutritious food) can lead to distress and thoughts of suicide, poor diet quality, malnutrition and/or chronic disease. KBIM team members explored food insecurity in clozapine and long-acting injectable services in the South Eastern Sydney Local Health District, finding much higher rates compared to the general Australian population rates, and that food insecurity was associated with detrimental lifestyle behaviours (**Figure 23**) (43, 44).

To combat this, KBIM dietitians now screen for food insecurity during assessment. KBIM has linked with the food rescue program OzHarvest, which provides weekly deliveries that can be made available to clients. A grant from UNSW Discipline of Psychiatry and Mental Health has also recently been awarded to co-design scalable food security programs in South Eastern Sydney Local Health District mental health services.

Figure 23. Key results from food insecurity studies.



What helped

- The growing reputation of the KBIM Program makes it easier to convey the objectives of related projects and seek funding for them.

What got in the way

- It is challenging to recruit staff into a new and unfamiliar workforce.
- Not all pilot projects demonstrate sufficiently convincing results to warrant ongoing funding.

What we learned

- There is an opportunity to contribute to education, training and curriculum development for lifestyle clinicians in mental health.
- There is also a need to train mental health clinicians and the peer workforce in lifestyle psychiatry and physical health co-morbidities.

Keeping the Body in Mind(gardens)

2019 - current

The Mindgardens Neuroscience Network was established to improve the lives of individuals who experience mental health, drug and alcohol, and neurological disorders. Focused on real-world challenges, Mindgardens is acting as a catalyst to change the way mental health, drug and alcohol,

and neurological healthcare services are designed and delivered by bringing together people with lived experience, clinicians, researchers, health managers, and the community in an integrated manner to focus on outcomes, co-designing new models of care, and effecting genuine system change.

Mindgardens is a partnership between four founding organisations: South Eastern Sydney Local Health District, University of NSW, Black Dog Institute and Neurological Research Australia (NeuRA). Professor Jackie Curtis, whose work was instrumental in the establishment of Keeping the Body in Mind, is the Executive Director of Mindgardens.

In 2019, the Australian Government funded the newly-established Mindgardens Neuroscience Network to build the capacity and scalability of a range of programs including KBIM’s physical health initiatives through translational research and evaluation. The Keeping the Body in Mind(gardens) (KBIM-G) program is creating an evidence base intended to drive the implementation of KBIM services across NSW and Australia and expand their scope into new domains of physical health need for mental health consumers. The KBIM-G team includes translational researchers, clinicians, project managers, and people with lived experience, who are progressing this expansion according to the timeline presented in Figure 22.

Figure 22. A timeline of the KBIM-G translational research activities.

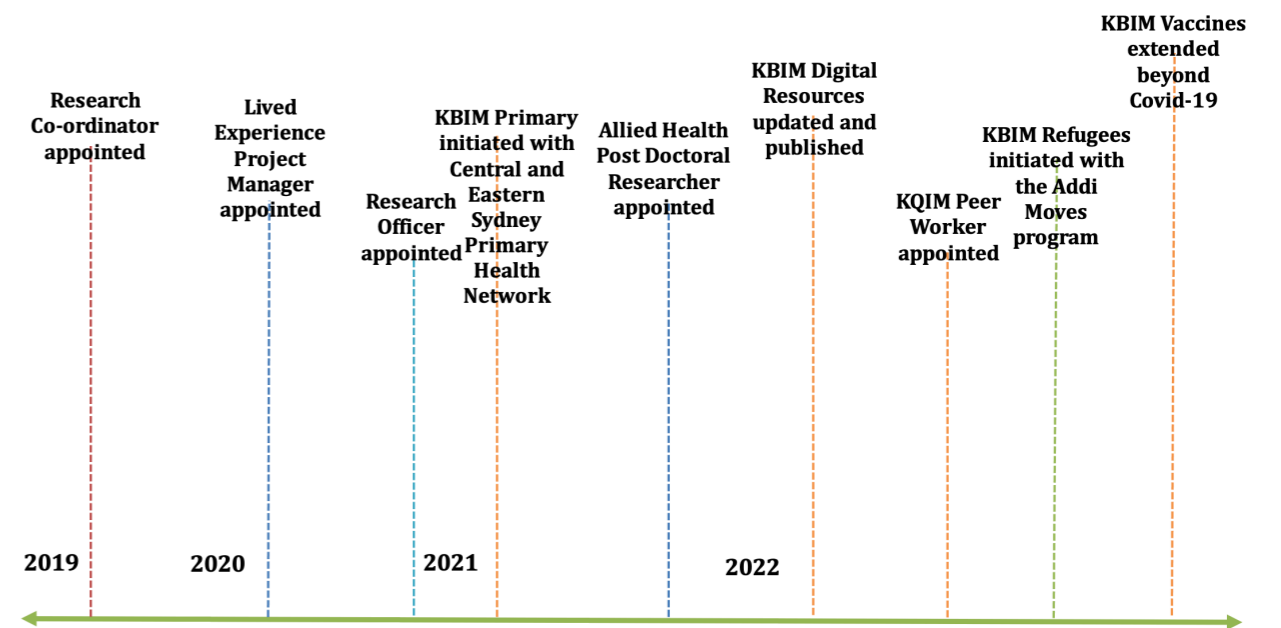




Figure 23a. The UNSW Lifestyle Clinic in Randwick, where KBIM Primary is delivered.

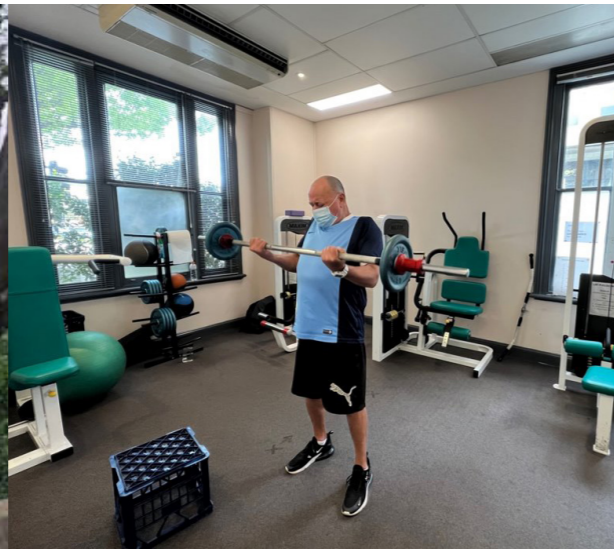


Figure 23b. Exercise physiology at the UNSW Lifestyle Clinic

KBIM Primary

2021 - current

Before 2021, people living with serious mental illness who were not clients of the mental health service but being supported by general practitioners (GPs) were not eligible for South Eastern Sydney Local Health District KBIM services.

The Central and Eastern Sydney Primary Health Network (CESPHN), which is responsible for planning of primary health services in an area that overlaps that of SESLHD's mental health services, then funded a full-time exercise physiologist to provide KBIM Primary – a primary care version of the KBIM service. Additional funding from the UNSW Medicine Neuroscience, Mental Health and Addiction Theme and SPHERE Clinical Academic Group enabled the employment of a 0.4FTE dietitian.

KBIM Primary offers eight free sessions with the exercise physiologist and dietitian through the UNSW Lifestyle Clinic in Randwick. A preliminary evaluation in 2023 highlighted 136 referrals, 78 program participants and 1001 sessions delivered. A participant survey found people were enthusiastic about the program and its benefits, but thought it should be available for longer.

Participant feedback:

"It's helped me a lot with my confidence. A year ago, I was just at home. Now I'm getting out every day and I'm meeting friends."

"I feel a lot better for doing it. I feel proud for doing it and for getting through it. Physically better too and mentally."

Future directions feedback:

"Eight sessions is not enough."

"Not enough to develop long-standing behaviour."

Participants in KBIM Primary reported a sense of achievement, improved self-efficacy and mood. They spoke positively of the multi-disciplinary team and the flexibility of the program, including different communication options, support for last-minute bookings and the availability of shorter interim consultations between formal appointments.

However they also said the shorter length of the program was a barrier to successful lifestyle change, along with last-minute cancellations and in some cases poor communication with GPs. Some struggled with motivation or with the continuing effects of their mental health, which impacted their participation, and people said it was important to manage participants' expectations for success.

So in late 2023, the KBIM(gardens) team continued collaboration with CESPHN to expand the program to increase the dietitian availability (0.8FTE), as well as including a tobacco treatment specialist (0.6FTE) and mental health peer worker (0.6FTE). The number of sessions was also expanded to be 10 per participant.

KBIM – Digital Resource Package

2022 - current

The NSW Mental Health Commission funded Mindgardens and the KBIM-G program to update and digitise a comprehensive clinician training package, aligned with the NSW Ministry of Health's Physical Health Care for People Living with Mental Health Issues Guidelines.

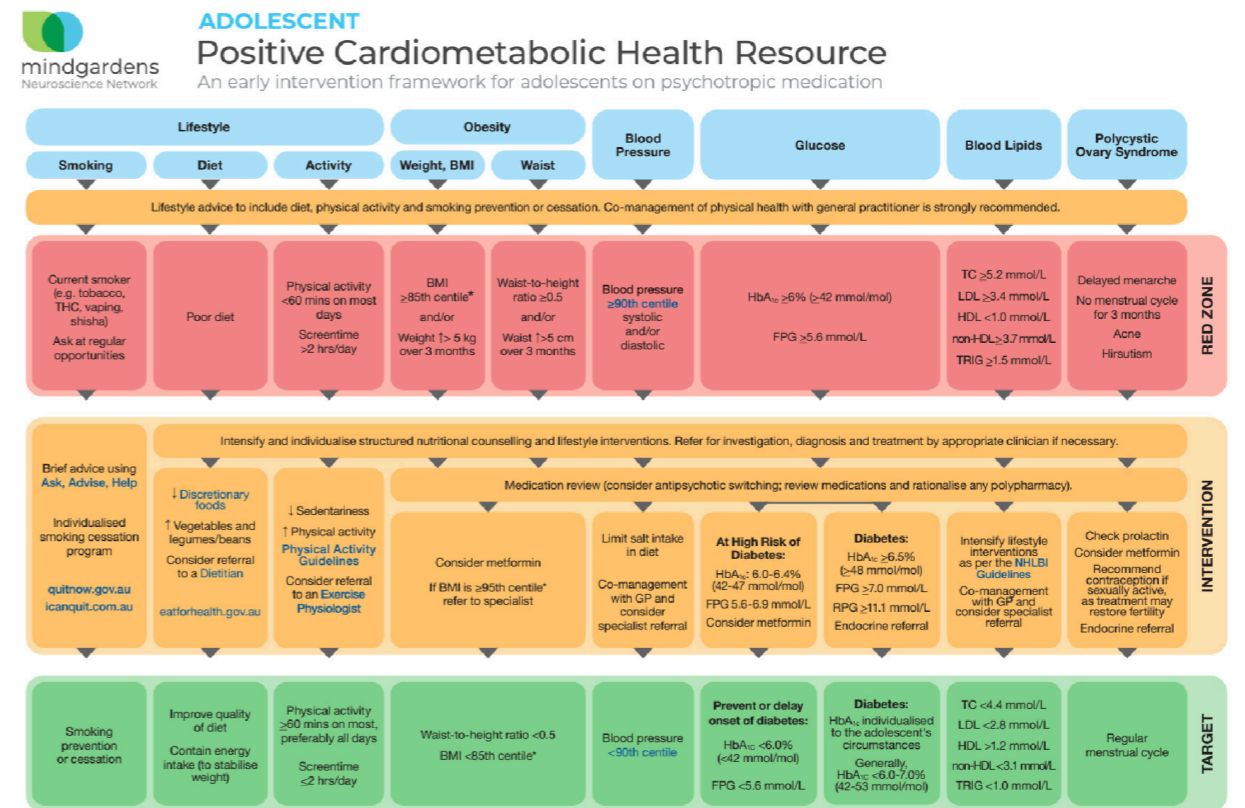
Components included:

1. Updating the existing cardio-metabolic algorithms for youth and adults, based on current evidence and guidelines.
2. Development of the *Tobacco Treatment Framework* algorithm to aid in supporting consumers with serious mental illnesses in quitting smoking.

3. Digitisation of KBIM Clinician Physical Health Modules for easy accessibility and regular updates.
4. Development of clinician training videos to provide engaging and informative learning resources.

These resources are freely accessible through the NSW Ministry of Health Portal for Physical Health Care for People Living with Mental Health Issues and can be used to improve the knowledge and skills of mental health clinicians, ultimately leading to better physical health care for individuals living with mental health conditions. They are also published on the Mindgardens website and at Appendix 1 of this report.

Figure 24a. Adolescent Positive Cardiometabolic Health Resource.



*BMI sex-specific centile chart, either US-CDC or WHO. Ensure that the same chart is used over time to allow for consistent monitoring of growth.
 BMI = Body Mass Index | FPG = Fasting Plasma Glucose | HbA_{1c} = Glycated Haemoglobin | HDL = High Density Lipoprotein | LDL = Low-Density Lipoprotein | RPG = Random Plasma Glucose | TC = Total Cholesterol | TRIG = Triglycerides
 mindgardens.org.au/KBIMResources

Figure 24b. Keeping the Body in Mind(gardens) training video: Nutrition.



KBIM Refugees – The Addi Moves Program

2022 - current

Individuals from refugee or asylum seeker backgrounds often encounter barriers that prevent them from accessing safe, enjoyable, and suitable exercise facilities.

To bridge this gap, Addi Moves was established to meet the needs of this population, providing a free, mental health informed exercise facility at the Addison Road Community Centre in Marrickville, where it is easily accessible to individuals already using other essential services, such as the food pantry. This strategic placement ensures that those who may face multiple challenges can engage in meaningful physical activity conveniently and without any additional financial burden.

Modeled on the Keeping the Body in Mind program, Addi Moves is co-facilitated by exercise physiologists and individuals who share similar backgrounds as the clients they serve. This ensures not only physical safety but also fosters a culturally sensitive and supportive environment. By having facilitators who can relate to the experiences and challenges faced by their clients, Addi Moves creates a space where individuals from refugee and asylum-seeking backgrounds feel understood, welcomed, and encouraged to take part in physical activities that contribute to their overall well-being.

Addi Moves is a collaboration between UNSW Sydney, Mindgardens, and the Addison Road Community Organisation, and is funded by the NSW Ministry of Health.



KBIM Vaccines

2022 - current

Keeping the Body in Mind: Vaccines (KBIM-V) began as a successful COVID-19 vaccination clinic in collaboration with the Eastern Suburbs Mental Health Service and the Kirketon Road Centre primary health service. It responded to strong evidence that people with serious mental illness are significantly less likely than others to be vaccinated against a range of preventable diseases, and more likely to become seriously ill and be admitted to hospital if they become infected.

Led by mental health peer workers and nurses, the model achieved vaccination rates similar to the general public for people with severe mental illness (45).

Based on this success, NSW Health's Health Education and Training Institute (HETI) funded a pilot project to co-design and run a comprehensive vaccine service, offering all recommended vaccines within the Eastern Suburbs Mental Health Service. Vaccinations are provided opportunistically in locations where individuals feel comfortable, including home or mental health community centres. Family members and carers are invited to receive vaccinations at the same time, offering additional protection. Following the clinic's establishment, the proportion of Eastern Suburbs Mental Health Service consumers who had received at least two Covid-19 vaccinations increased from less than 10% in June 2021 to more than 80% by December 2021. The pilot results also highlighted the importance of mental health peer workers, who proved essential in understanding people's concerns and providing reassurance.

Thanks to funding from the Central and Eastern Sydney Primary Health Network, KBIM-V subsequently expanded throughout the South Eastern Sydney Local Health District to the Sutherland and St George mental health services.

Figure 25. Staff at the KBIM-V site at The Maroubra Centre



What helped

- Availability of KBIM clinicians working on-site five days a week, embedded within each mental health service across the health district and working collaboratively with the whole mental health team.

What got in the way

- Program expansion is challenging to implement and measure. Subsequent projects do not always achieve the same positive outcomes as early demonstration sites.

What we learned

- It is important to take an expansive view of consumers' needs. By listening deeply to people with lived experience, we can reach new groups, shape new interventions, and identify better means of delivery.

Influence on other services

KBIM has been an inspiration for physical health in mental health services across the globe. Many international teams have travelled to the Bondi Junction Community Health Centre to see KBIM in action, while others attended conference presentations and followed up later with detailed questions.

Some of these interactions led to major policy changes at national and regional levels; others have been more localised – like the Egyptian clinic that re-modeled its appointment system so consumers could access lifestyle advice while waiting for their mental health consultation.

The examples that follow highlight the influence of KBIM – globally, locally and culturally.

KBIM video for 2014 National Psychosis Summit

KBIM was sponsored by Rethink UK to create a video of the development of KBIM, intervention components and effects. The video was created to be played alongside a presentation by the KBIM Clinical Nurse Consultant at the 2014 National Psychosis Summit and contains the views of the KBIM clinicians, broader team and collaborators and participants of the program.

Cross-cultural influence in Japan

The KBIM clinicians thought of themselves as improving worldwide standards for physical health-care in first episode psychosis. In fact, their influence sometimes extended well beyond care and treatment standards.

“In Japan, where mental illness was highly stigmatised, the revelation that people who live with psychosis die many years younger was highly shocking,” recalls Professor Philip Ward. “Even though families might have felt social shame, they were not willing to accept this loss of life, and it motivated people to advocate for better physical health-care for their loved ones. It was an unintended consequence ... we accidentally developed a really powerful anti-stigma tool.”

Cultural influence within psychiatry

Long-standing professional tradition held that psychiatrists should not touch their patients' bodies or concern themselves with their physical health. The rise of KBIM and the HeAL Declaration challenged that norm.

In 2013, the then president of the UK's Royal College of Psychiatrists, Professor Dame Sue Bailey, attended an iPhys meeting in Leuven, Belgium, where she offered support for the approach – telling attendees

that as doctors they must be able to conduct a physical examination. Her remarks began to turn the tide in the UK and internationally, motivating psychiatrists to develop their skills in physical health assessment and treatment – including taking body measurements.

Positive Cardiometabolic Health Algorithm adaptations

The adult algorithm has been adapted for use in the UK (the Lester Adaptation, named in honour of the late Professor Helen Lester, a renowned GP and academic) and Canada, and for use in people living with an intellectual disability (in collaboration with the Department of Developmental Disability Neuropsychiatry, UNSW). It has also been adapted and translated into the following languages: **Spanish, Finnish, Italian, Japanese, Norwegian, Portuguese** and **Swedish**. All versions are available here.

World Health Organisation (WHO) Guidelines

Dr Jackie Curtis, then Director of Youth Mental Health at the South Eastern Sydney Local Health District, was a member of the Guideline Development Group for the Management of Physical Health Conditions in Adults with Severe Mental Disorders: WHO Guidelines, 2018 (46). The guidelines included work by members of the KBIM team(47) within the evidence profile.

Awards and Recognition

2023 – “Outstanding Team Effort”, Equally Well National Symposium

2022 – “Therapeutic and Clinical Services”, The Mental Health Services Awards of Australia and New Zealand

2022 – “Improving practice in primary health care”, Central and Eastern Sydney PHN Awards (*Finalist*)

2021 – “Health Research and Innovation”, South Eastern Sydney Local Health District Healthcare Awards

2021 – “Health Research and Innovation”, NSW Health Awards (*Finalist*)

2015 - Research Award, Australian College of Mental Health Nurses, 41st International Mental Health Nursing Conference 2015.

2011 – “Provision of Mental Health Services”, NSW Health Awards (*Finalist*)

2007 - Mental Health Matters Government Organisation award, Mental Health Association NSW

2005 - Partnerships in Well-Being major award, Australian College of Mental Health Nurses

Afterword

Dr David Shiers

It has been a privilege to witness first-hand the transformative impact of the Keeping the Body in Mind Program and its many offshoots. KBIM has been instrumental in challenging the established Early Intervention in Psychosis paradigm to embrace the body as well as the mind. By seizing the opportunity to avoid or mitigate adverse physical health impacts early in the course of severe mental illness, KBIM is leading a revolution in how services support these young people.

Over the last twelve years I have seen how Jackie Curtis and her KBIM colleagues have changed the conversation from not just *why* but *how* to tackle this health inequality. Critically the KBIM team have *walked the talk*. This is amply demonstrated by KBIM's success in curtailing severe weight gain among young people experiencing psychosis for the first time. The KBIM approach moved beyond theory and showed what could be achieved in practice, collecting robust evidence that has been highly influential in health policy and practice in the UK and many other countries.

The team's collegiality is central to this success. Through its open and supportive culture, the KBIM team have established a vibrant learning exchange inspiring many international visitors like myself who have been warmly received at Llandaff St., Bondi Junction to see their work in practice. The KBIM call to action - *Don't just screen, intervene* – through its Positive Cardiometabolic Health Resource has been widely adopted and has changed the language and perspective of many mental health services, including those in England. The UK adaptation of the resource has become deeply embedded in NHS England policy, its use supported by our National Institute for Clinical Excellence (NICE) and various Royal Colleges, and forming a central part of the National Clinical Audit of Psychosis. This progress would have been unimaginable ten years ago, when Jackie and colleagues first shared this work so generously.

Of course, there is further to go in terms of consumers' health outcomes. A big increase in screening is extremely positive, but we need to see a lot more intervening. We also need to address other health inequalities experienced by this population: oral health, sexual health and bone health, for a start.

As we reflect on the progress of KBIM, I want to emphasise not just these tangible outcomes but also the extraordinary cultural shifts it has achieved in mental health care. KBIM has established physical health as the legitimate province of mental health practitioners, recognising that mental health consumers and their families not only should expect but have the right to care that embraces their physical and psychological selves.



This cultural shift really matters to families like mine. My daughter with a diagnosis of schizophrenia is now in her late 40s and deals with the burden of several physical disorders, multiple treatments and clinic appointments. Many of these difficulties were rooted thirty years ago in a ward regimen characterised by containment and medication, with nothing to do except sit and eat extra helpings of pudding, offered by staff who felt sorry for her, to quell her antipsychotic-induced food craving. I'm certain that had Mary's problems started today and her first experience of care been KBIM, then she would have encountered a service that not only helped her deal with her psychosis but also engaged her as a 'whole person' to explore for instance how her weight, fitness, sleep and diet impacted on her life and how she felt about herself. For instance, she would be helped to choose antipsychotics with less propensity to cause weight gain. She would be supported by practitioners who didn't just say 'take more exercise' or 'eat less' but began a realistic conversation about how her previous interests in walking and being outdoors could be maintained and encouraged as essential parts of her treatment and recovery.

I think the cultural shift sparked by KBIM can go beyond psychosis. Its whole person orientation has the potential to spill over into how services respond to other mental health conditions, encouraging mental health practitioners to *keep the body in mind* in how they approach any psychiatric difficulties, like a young person experiencing attention deficit hyperactivity disorder, or an adult with depression or anxiety.

I thank Jackie and the KBIM team for their dedication to making a difference to families like mine. Their contribution to meaningful, practical change, has already made an indelible mark on mental health policy and practice. I will be cheering them on as they continue their journey.

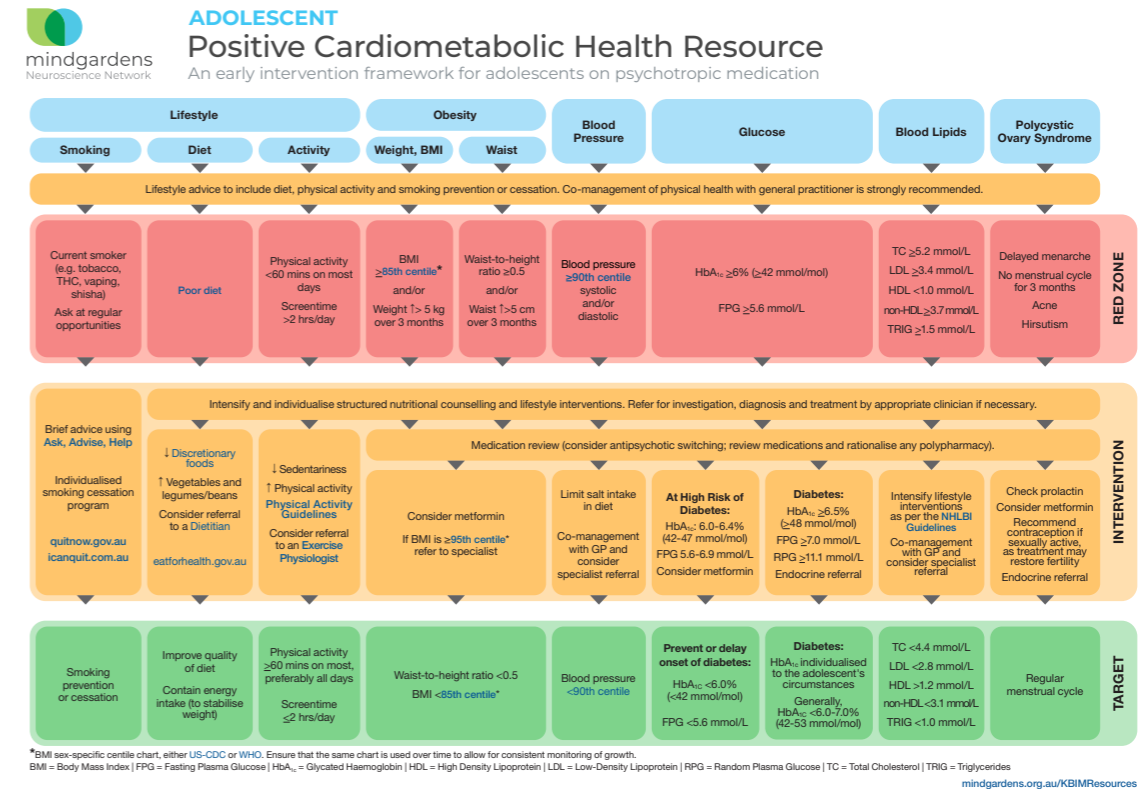
Dr David Shiers is a UK-based carer of an adult daughter who lives with schizophrenia, and a former general practitioner.

Glossary

- CASPAR** Comprehensive Assessment Service for Psychosis and At-Risk for psychosis – a youth service within the South Eastern Sydney Local Health District.
- CETI** Clinical Education Training Institute – a predecessor organisation to the Health Education and Training Institute (HETI).
- Consumer** A person who has lived experience of a mental illness / a person receiving support for mental health.
- ESMHS** Eastern Suburbs Mental Health Service – mental health services which includes the Bondi Junction Community Health Centre and the Prince of Wales Hospital in South Eastern Sydney Local Health District.
- FEP** First episode psychosis
- HeAL** Healthy Active Lives – an international consensus statement developed by the iphYs group.
- HETI** Health Education and Training Institute – education and training partner for NSW Health.
- IEPA** International Early Psychosis Association
- IFEVR** International First Episode Vocational Recovery network – international group of clinicians, researchers, economists and policy makers with an interest in employment and education in youth with psychosis.
- IMET** NSW Institute of Medical Education and Training – a predecessor organisation to the Health Education and Training Institute (HETI).
- iphYs** International Physical Health in Youth Stream – an international group of academics, clinicians, consumers and carers with an interest in the physical of youth with psychosis.
- KBIM** Keeping the Body in Mind – lifestyle intervention for people receiving support from the mental health service.
- KBIM-G** Keeping the Body in Mind(gardens) – physical health translational research activities supported through Mindgardens Neuroscience Network.
- KBIM-P** Keeping the Body in Mind Primary Care – physical health program for people with mental health concerns receiving support from GPs and other primary care services.
- KBIM-V** Keeping the Body in Mind Vaccines – a vaccination service for people with serious mental health concerns.
- KQIM** Keeping Quitting in Mind – smoking cessation program for adults receiving support from the mental health service
- KoSiM** Keeping our Staff in Mind – a brief lifestyle intervention for staff of the mental health service
- Lifestyle intervention** The implementation of changes to health behaviours such as physical activity or diet. The lifestyle intervention central to the work in this document is the Keeping the Body in Mind (KBIM) Programme.
- M-BACK** Metabolic-Barriers, Attitudes, Confidence and Knowledge – a questionnaire to assess each of the listed domains in staff of the mental health service.
- NSW Health** New South Wales Health – the public health service system operating in the Australian state of New South Wales.
- PhD** Doctor of Philosophy – a higher degree by research at university
- Peer worker** A peer worker draws on their lived experience of mental illness, suicidal crisis and recovery to provide support for people accessing mental health care, inspiring hope and role modelling recovery.
- Physical health** Functioning of the body as opposed to the brain (mental health) – in this document it generally relates to lifestyle and the prevention/treatment of chronic conditions such as heart disease.
- POWH** Prince of Wales Hospital – public hospital in Eastern Suburbs Mental Health Service, which is part of South Eastern Sydney Local Health District
- RadCaL** Recovery and Discovery in Community and Lifestyle, an intervention program
- yQUIT** A youth smoking cessation program

APPENDIX 1 - Adolescent and Adult Positive Cardiometabolic Health Resources

The Adolescent and Adult Positive Cardiometabolic Health Resources were revised in 2023 and are reproduced here. They can also be found at www.mindgardens.org.au/kbimresources/



History and examination following initiation or change of psychotropic medications

History: Seek history of smoking, poor diet (e.g. high calorie, high fat/sugar), physical activity and sedentaryness (e.g. screen time), sleep, and polycystic ovary syndrome. Ask about family history (diabetes, obesity, early CVD), gestational diabetes. Note ethnicity.

Investigations: Fasting estimates of plasma glucose (FPG), HbA_{1c}, and lipids (total cholesterol, LDL, HDL, non-HDL, triglycerides). If fasting samples are impractical then non-fasting samples are satisfactory for most measurements except for triglycerides.

Frequency: At a minimum, those starting or changing antipsychotics should be monitored as below. After 12 months, continue to monitor at 6-month intervals, with increased frequency if abnormalities emerge, which should prompt appropriate action and/or continuing review at least every 3 months.

| Personal/Family History | Monitoring Intervals | | | | | | |
|-----------------------------|----------------------|---------|----------|----------|----------|-----------|--------------------|
| | Baseline | Weekly* | 3 months | 6 months | 9 months | 12 months | Continue 6 monthly |
| Lifestyle Review | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Weight | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Waist | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Blood pressure | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| FPG, FPG, HbA _{1c} | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Lipid profile | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Vitamin D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

*Weight should be assessed weekly to fortnightly in the first 6 – 8 weeks following initiation or change of medication. Commencing antipsychotics is a time of particular risk of rapid weight gain and this may predict severe weight gain in the longer term.

Other Considerations: Other baseline investigations are not included here and need to be performed as clinically required (e.g. TFTs, UECs, FBC, ECHO). Additional monitoring requirements apply for those on mood stabilisers and clozapine (e.g. medication plasma levels). Prolactin measurement is only recommended if symptomatic. Consider ECG/cardiology review if concern regarding QT prolongation or cardiovascular risk factors present.

Some medications used to treat metabolic disorder are contraindicated in pregnancy (e.g. some antihypertensives and lipid lowering drugs). Other issues such as sexual health, blood borne virus screening, oral health, vaccination status, and substance use have not been included in this resource though are important to discuss with all young people.

DON'T JUST SCREEN INTERVENE for all people in the 'red zone'

Decision making surrounding screening and agreed interventions should be made with the young person and family/carers, and include consultation with key stakeholders (e.g. general practitioner, paediatricians, mental health clinicians, and community providers).

Review of antipsychotic and mood stabiliser medications

- Choose lower metabolic liability medication first line where possible
- Review diagnosis and ensure ongoing need for all psychotropic medications
- Consider switching to a more weight neutral medication where possible
- Avoid antipsychotic polypharmacy
- Avoid off-label use of antipsychotic medications
- Changing antipsychotic medication requires careful clinical judgement to weigh any benefits against the risk of relapse of psychosis

Review should be a priority if there is:

- Rapid weight gain (e.g. 5 kg < 3 months) following antipsychotic initiation or change
- Rapid development (< 3 months) of abnormal lipids, BP or glucose

If the young person has not successfully reached targets after 3 months, then consider specific pharmacological interventions

Specific pharmacological interventions

Consider metformin trial for:

- Impaired fasting glucose
- Obesity or rapid weight gain
- Polycystic ovary syndrome

Note that **off-label use** requires documented informed consent

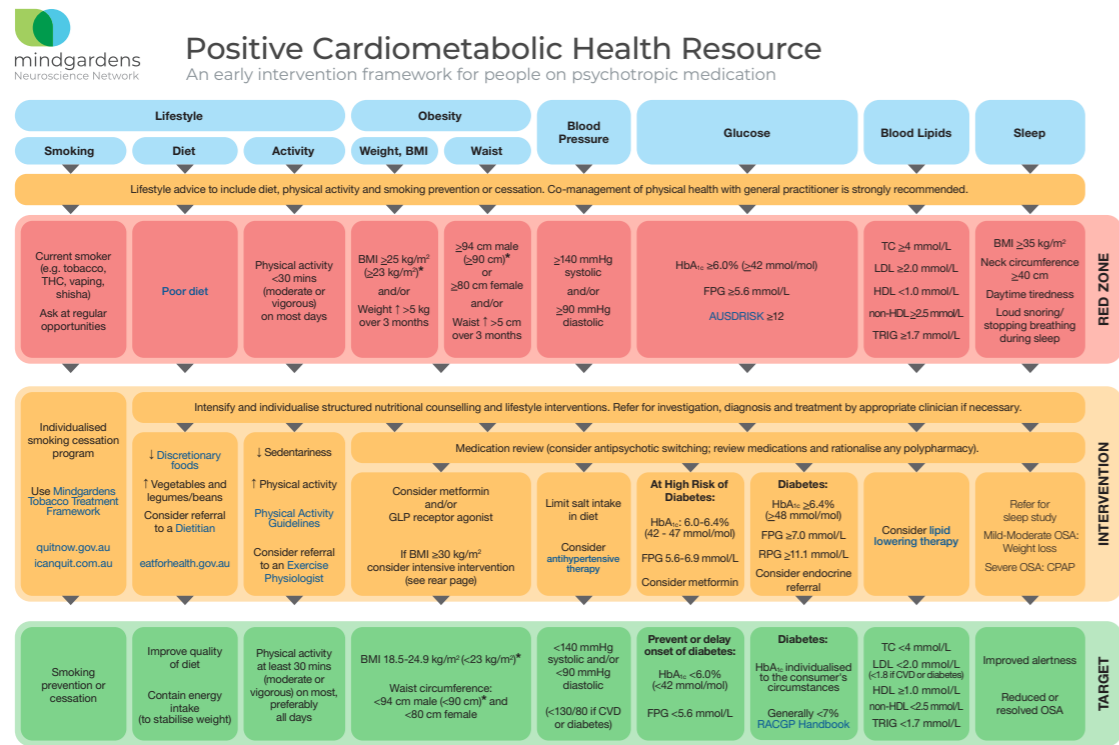
Metformin therapy: Start at 250 mg before dinner for two weeks, then increase to 250 mg bid. Dose can be increased by 500 mg per week to a maximum of 2 grams daily (taken in split doses with meals). If side-effects of nausea or abdominal cramping, shift to after meal (or the XR preparation)

Lipid lowering therapy: Consider lipid lowering therapy (use PBS guidelines) if severe hyperlipidaemia or other risk factors, with appropriate specialist referral

Antihypertensive therapy: Refer to general practitioner or specialist

Vitamin D: <30 nmol/L. Cholecalciferol treatment 1,000-2,000 IU daily for 3 months to replenish stores followed by a maintenance dose of 1000 IU daily

- Target: >80 nmol/L



*For South Asian, Chinese, Japanese, Ethnic South and Central Americans. | BMI = Body Mass Index | CVD = Cardiovascular disease | FPG = Fasting Plasma Glucose | GLP = Glucagon-like Peptide | HbA_{1c} = Glycated Haemoglobin | HDL = High Density Lipoprotein | LDL = Low Density Lipoprotein | OSA = Obstructive Sleep Apnoea | RPG = Random Plasma Glucose | TC = Total Cholesterol | TRIG = Triglycerides

mindgardens.org.au/KBIMResources

mindgardens Neuroscience Network **Positive Cardiometabolic Health Resource**
An early intervention framework for people on psychotropic medication

Access the guide and complete list of references online either by scanning the QR code or by visiting mindgardens.org.au/KBIMResources

History and examination following initiation or change of psychotropic medications

History: Seek history of smoking, poor diet (e.g. high calorie, high fat/sugar), physical activity and sedentaryness (e.g. screen time), sleep, and polycystic ovary syndrome. Ask about family history (diabetes, obesity, early CVD), gestational diabetes. Note ethnicity.

Investigations: Fasting estimates of plasma glucose (FPG), HbA_{1c}, and lipids (total cholesterol, LDL, HDL, non-HDL, triglycerides). If fasting samples are impractical then non-fasting samples are satisfactory for most measurements except for triglycerides.

Frequency: At a minimum, those starting or changing antipsychotics should be monitored as below. After 12 months, continue to monitor at 6-month intervals, with increased frequency if abnormalities emerge, which should then prompt appropriate action and/or continuing review at least every 3 months.

| Monitoring Intervals | Baseline | Weekly* | 3 months | 6 months | 9 months | 12 months | Continue 6 monthly |
|-----------------------------|-------------------------|---------|----------|----------|----------|-----------|--------------------|
| | Personal/Family History | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Lifestyle Review | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Weight | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Waist | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Blood pressure | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| FPG, RFG, HbA _{1c} | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Lipid profile | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Vitamin D | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

*Weight should be assessed weekly to fortnightly in the first 6 – 8 weeks following initiation or change of medication. Commencing antipsychotics is a time of particular risk of rapid weight gain and this may predict severe weight gain in the longer term.

Other Considerations: Other baseline investigations are not included here and need to be performed as clinically required (e.g. TFTs, UECs, FBC, ECHO). Additional monitoring requirements apply for those on mood stabilisers and clozapine (e.g. medication plasma levels). Proctolin measurement is only recommended if symptomatic. Consider ECG/cardiology review if concern regarding QT prolongation or cardiovascular risk factors present. Screen for polycystic ovary syndrome in all women: No menstrual cycle for 3 months, acne, hirsutism. Check proctolin, consider metformin and endocrine referral. Treatment may restore fertility, ensure contraception is discussed. Some medications used to treat metabolic disorder are contraindicated in pregnancy (e.g. some antihypertensives and lipid lowering drugs). Other issues such as sexual health, blood borne virus screening, oral health, vaccination status, and substance use have not been included in this resource though are important to discuss with all consumers.

2023 Update. Adapted from Curtis J, Newall H, Samaras K. ©HETI 2011

DON'T JUST SCREEN INTERVENE
for all people in the 'red zone'

Decision making surrounding screening and agreed interventions should be made with the consumer and include consultation with carers, families, and key stakeholders (e.g. general practitioner, mental health clinicians, and community providers).

Review of antipsychotic and mood stabiliser medications

- Choose lower metabolic liability medication first line where possible
- Review diagnosis and ensure ongoing need for all psychotropic medications
- Consider switching to a more weight neutral medication where possible
- Avoid antipsychotic polypharmacy
- Avoid off-label use of antipsychotic medications
- Changing antipsychotic medication requires careful clinical judgement to weigh any benefits against the risk of relapse of psychosis

Review should be a priority if there is:

- Rapid weight gain (e.g. 5 kg < 3 months) following antipsychotic initiation or change
- Rapid development (< 3 months) of abnormal lipids, BP or glucose

If consumer has not successfully reached targets after 3 months, then consider specific pharmacological interventions

Intensive Interventions

Intensive interventions to support weight loss may be considered with a BMI of >30 kg/m² or if unsuccessful in reducing weight or has regained weight using lifestyle approaches. Intensive interventions may include:

- Metformin and/or GLP receptor agonist
- Very low energy diets for 8-16 weeks under medical supervision, replacing one or more meals per day with food or formulae that provide a specified number of kilojoules (e.g. 1675-3350 kJ/day)
- Referral to obesity clinic
- Consider referral for assessment for bariatric surgery

Specific pharmacological interventions

Consider metformin trial for:

- Impaired fasting glucose
- Obesity or rapid weight gain
- Polycystic ovary syndrome

Note that **off-label use** requires documented informed consent

Metformin therapy: Start at 250 mg before dinner for two weeks, then increase to 250 mg bid. Dose can be increased by 500 mg per week to a maximum of 3 grams daily (taken in split doses with meals). If side-effects of nausea or abdominal cramping shift to after meal (or the XR preparation)

Lipid lowering therapy: Co-management with GP recommended. Consider lipid lowering therapy (use PBS guidelines). If severe hyperlipidaemia or other risk factors, consider specialist referral

Antihypertensive therapy: Refer to general practitioner or specialist

Vitamin D:

- <50 nmol/L: Cholecalciferol treatment 3000-5000 IU daily for 6-12 weeks to replenish stores followed by a maintenance dose of 1000-2000 IU daily
- Target: >80 nmol/L

Funded by the Mental Health Commission of New South Wales

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